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THERE are in the lives of the busiest men some occasions when the duties, interests and preoccupations of professional life should give place for the moment to thoughts of citizenship, and we need not apologize to our readers if we devote a small portion of the space which is ordinarily claimed by technical matters to the expression of that grief which all must feel at the sad event which has deprived our country of its elected President, and his fellow-citizens of a pure and patriotic leader. The pity and sympathy with which the nation has watched for so many weeks the pain of its chosen chief has given place to a sorrow which for the time draws closer together the hearts of all Americans, and the bereavement of the quiet Ohio family afflicts ten million households. It is not for nothing that a nation is so deeply moved; at such moments, and under the influence of universal sympathy and grief, the nobler feelings find expression, and patriotism and the spirit of self-sacrifice are renewed and refreshed. It may be that the republic will before long demand such virtues in its citizens, and if the pity excited by the sufferings of our beloved President shall have been the means of fostering them, his painful death will have been no less serviceable to the country than his sincere and upright life.

A THREE-STORY building in process of erection for the Richmond and Alleghany Railroad Company at Richmond, Va., fell in last week, owing, it is said, to the bad design of the roof, which "was crushed in by the weight of the slate." Two men were killed, and four more injured in the fall. The newspapers remark that the railroad company is not responsible for the accident, as the building was in process of construction by contractors, from their own plans, and had not been delivered to the company. Who is responsible, no one undertakes to say. Without remarking on the singular way in which a railroad must be managed whose officers and engineers fail to discover such gross defects in the structure planned and built for their own occupancy, we may say with certainty that some one is responsible for the death of the two unfortunate men who were obliged to trust for safety to the skill of others. If the design of the roof was such that it could not sustain its own weight, then the person who designed it is accountable for the catastrophe; or if he, acknowledging himself to be incompetent, was compelled to undertake work beyond his skill by another person, who assumed the responsibility for it, then is the latter the real criminal. It cannot be very difficult to find out who these persons are, and to apportion the guilt between them; and although they may be unable to make pecuniary compensation for the loss and grief that they have been the means of inflicting, some good may be done by making an example of them, to deter other ignorant and reckless persons from trifling with the lives of the innocent.

A REMEDY for drought, which is by no means new, has been suggested to the mill-owners of Paterson, N. J., as a relief for the scarcity of water from which they suffer so much. Mr. J. A. Devoe, a meteorologist of some reputation, proposes to

bring about an artificial rain-storm by discharging a thousand blank cartridges into the air from cannon placed on high ground near the Passaic River. The cost of the gunpowder will be about five hundred dollars, which the manufacturers would gladly contribute if they were as sure of the result as Mr. Devoe is. The observation that rain almost invariably follows a great battle, or even such holiday firing of ordnance as is customary in the United States on the Fourth of July, is a very old one, and a century or more ago measures were taken in France for the establishment of cannonading stations in the agricultural districts, by means of which showers could be summoned in case of need. The proverbial difficulty in obtaining a general consent among farming populations to any particular day for rain may have led to the abandonment of the enterprise, which gave promise, we believe, of some success; but the mill-owners have reason to be more unanimous in their wishes. The experiment would be an interesting one, and curiosity, if nothing else, would urge that it might be carried out.

THE people of the newer parts of Cincinnati make complaint regarding the difficulty, or rather, the impossibility of procuring the consent of the city authorities to the establishment of a rational and complete system of sewerage. As in most other towns, public improvements are carried out, if at all, by disjointed and often inconsistent efforts, made in haste to satisfy the whims of influential or importunate persons who have only their private interests to serve, and without the smallest pretence at subordinating these minor operations to any definite and comprehensive scheme. At present the western part of the city is quite unprovided with sewers, and multitudes of persons who have purchased land there are waiting for these essential requisites of wholesome suburban life before commencing the houses which they wish to erect. The most obvious principles of policy would seem to urge the city government to provide proper drainage without delay for the sake of promoting improvements in the territory, whose increased valuation would pay in taxes the cost of the work within the first year; but such considerations have, unhappily, little force with officials whose tenure of office is limited to a few months, and the slightest opposition from persons who are satisfied with the present condition of things is sufficient to postpone any action. The remedy for these defects of administration, which cause deplorable waste of public funds in securing the smallest and most questionable results, is the appointment of permanent Commissions of Public Works, who shall have absolute control of sewerage, water-supply, and the planning and construction of streets. Under the charge of such a body the continual digging up of pavements, relaying of pipes, shifting of drains, straightening, widening and regrading of highways, which now absorbs so much of the money of tax-payers, would be avoided, while the beauty, healthfulness and convenience of most towns would be increased ten-fold.

THE opening of the Electrical Exhibition in Paris has called up many reminiscences of the early days of telegraphs and other electrical apparatus. At a lecture delivered in the building by the Count du Moncel, the actual instruments were shown with which, in 1809, Professor Soemmering of Munich was able by the use of twenty-six wires to send intelligible messages a distance of nearly a mile. The wires were immersed in water, and over each was marked a letter of the German alphabet, one being left for the return current. By means of a voltaic cell a feeble chemical action could be excited at the end of any given wire, and the bubbles of gas from the decomposition of water about it indicated what letter was intended. Another primitive telegraphic apparatus, of which some fragments were shown, was that of Francis Ronalds, who employed frictional electricity from a common plate machine. At each end of his line, which was three miles long, was placed a dial, marked on the circumference with the characters of the alphabet, and moved at a uniform speed of clock-work. The operator at either end, to send a message, had only to watch the dial, and when the letter which he needed appeared at the proper point, by making connection with the charged conductor of the plate machine a spark was instantaneously transmitted to the extremity of the wire, making known to the other, who kept watch of his own dial, the letter intended. This system differed very

little from some which are still in use, except by the employment of electricity of high tension instead of the voltaic current; but its value was so far from being appreciated that when Ronalds offered to establish a naval telegraph between London and Portsmouth, the Admiralty replied that "it had no use for communication of that kind."

AMONG the contributors to the Paris Electrical Exposition the Americans take a less prominent part than was at first expected. The reputation which Mr. Edison has justly attained gives to his exhibit, which is a very large one, a special interest and importance, and some other American inventors occupy conspicuous positions, but in the number of exhibitors the United States falls far behind Great Britain, Belgium, Germany, and Italy. Even Russia, which is popularly supposed to be inhabited by tribes of Tartars, whose superiority in civilization to Turks is, to say the least, doubtful, furnishes twenty-seven contributors, ranking next below our own country, and at no great distance. One exhibit from Japan should be welcomed with peculiar distinction, as presaging the active competition in matters of science which the Western nations may yet have to sustain from that thoughtful and industrious people. It is remarkable that although the applications of electricity on the Continent are so numerous that from Belgium alone nearly four times as many exhibits are sent as from the United States, its familiar use is far more widely spread on this side of the Atlantic than on the other. Thousands of subscribers in all our large cities now find the telephone indispensable in the transaction of their business, and private lines are multiplying daily, while the wires of electric bells, private or subscription telegraphs, fire-alarm signals, electric lamps, and gas-lighting apparatus crowd together in the streets and buildings even of small villages.

THE increasing defilement of the River Thames in London by sewage from the outfall of the great Metropolitan system, several miles below the city, has called forth vigorous expressions of discontent from several English journals. In round numbers, the average quantity of sewage pumped daily into the river is seven hundred and fifty thousand tons, and of this vast quantity a certain part is brought back by the tide through the heart of the city, depositing a filthy and offensive slime along the shores and upon the bridges and piers. The enormous expense of the sewage outfall works rendered the public, which paid for them, reluctant to believe that they had failed of their purpose, and the contamination was ascribed to the drainage from towns higher up the stream; but the recent report of the Conservators of the River Thames plainly says that "it can hardly be doubted that the chief cause of the polluted state of the river within and below the metropolis arises from the discharge at the outfalls and storm outlets of the Metropolitan Board of Works." In the strict, but wholesome law enacted for preventing the pollution of rivers, an express exception was made in favor of the Metropolitan Board, which was permitted to discharge crude-sewage into the Thames, provided always that the stream within the city limits was kept free from defilement. It is satisfactorily ascertained that the Board fails to comply with this provision, and it is consequently the duty of the Thames Conservators to bring it to account, and compel a change in its system. What it can do next is a difficult question. The best opinion among engineers is now very strongly in favor of the utilization of sewage by means of irrigation, but the treatment of eight hundred thousand cubic yards of liquid per day is an undertaking which may well appall the average city official.

IN London, as well as in New York, Chicago, and Boston, the past year has been one of great activity in building operations. According to the report of the Metropolitan Police quoted in the *Builder*, the number of houses erected in the city in 1880 was twenty-four thousand nine hundred and forty-five. Seventy miles of new streets were placed under the care of the police during the year. The increase of population is almost exclusively on the outskirts of the town; the interior parishes lose, both in the number of houses and of inhabitants, year after year. Thus the small district known as London City lost one third of its population, and nearly one third of its buildings, in the last ten years, and St. Giles, the Strand, Holborn, Shoreditch, Westminster and Marylebone also show diminution, while Lambeth, Chelsea, Fulham, Hampstead, Islington, Camberwell and Poplar, which were not long ago quiet suburban villages, have gained much more than the

older portions of the metropolis. In some of the sub-districts half the houses have been removed since 1871 and replaced by commercial buildings. This steady movement of population indicates a returning prosperity of affairs in England which is very gratifying. Certain manufacturing centres, such as Manchester, have decreased within the last decade, instead of sharing in the general advance, but these are fortunately exceptional.

THE *Builder* gives some statistics of the expenditure made by the English railway companies for the better accommodation of their freight traffic, which will surprise those who do not know the enormous development which these corporations have reached. On the line, for instance, of the North-Western Railway Company alone are four freight stations whose total cost has amounted to twenty-six and a half million dollars. The buildings which shelter its freight business in London, quite exclusive of any accommodation for passengers, represent a value of eleven and a half million dollars, or about the same as that of the Capitol at Washington, or the Brooklyn Suspension Bridge. Compared with the tin-covered wooden sheds which our railroads find sufficient for such purposes, the costly structures of the English lines indicate a power and resource which ours cannot yet rival; and the great hotels connected with the railway stations in the principal cities bear still further witness to the abundant accumulations of surplus which the business still affords.

THE accounts of the discovery of petroleum springs in Germany, which caused much excitement a few months ago, were followed more recently by a report that the so-called wells were impostures, made to appear real by "salting" with American oil. A letter to the *Builder*, however, sets the case in a very different light. According to this correspondent, the new town of Oelheim, twenty-five miles from Hanover, is the scene of nearly as much activity and excitement as any of the oil cities of Pennsylvania. Some years ago several unsuccessful borings were made in this district, but after the expenditure of a large sum of money the attempt to find petroleum was abandoned; and it was not until the spring of this year that renewed attention was called to the subject, and in spite of the failure of previous efforts another trial well was sunk, almost in the same place, which struck a spring of oil equalling in yield any yet discovered in the United States. Twenty thousand gallons per day are still pumped from this well, and others, nearly as productive, have been bored near by. The perforation of the ground was at first carried on after the American system, but this was found not to answer its purpose, and rods armed with boring tools are now employed. The oil is found in sandstone and gravel, at a depth of two hundred feet or more, and it is necessary to line the holes with tubes of sheet-iron. Six companies are now at work in Oelheim, and in order to save the cost of transportation, a large refinery is to be at once erected.

A QUESTION of party-wall rights which has some general interest is submitted to *La Semaine des Constructeurs* for decision. Two men, A and B, owned in common the division wall between their houses. A added to the height of his house, extending the party-wall upward, as he had an unquestioned right to do; but after the completion of the work it was found that the new gable, being exposed to the rainy winds, was rapidly deteriorating, and that some means must be taken to protect it, so he arranged to cover it with metallic slates. B, however, forbade the application of any protective covering to the wall, on the ground that, being a virtual addition to its thickness, it would project over into the estate of which he was the sole owner; the party-wall right covering only the bare thickness of the masonry. To this claim *La Semaine* makes response that although B is not obliged to pay any part of the expense of building or protecting that portion of the wall which he does not himself use, he cannot prevent his neighbor from taking any reasonable means for preserving the upper portion of the masonry, provided he suffers no actual injury thereby. Moreover, since A pays the whole expense of the masonry above B's roof, it belongs to him, until B chooses to use and pay for half of it; and he is the sole judge of what steps may be necessary for protecting his property. This doctrine seems rational enough, but cases often occur where neighboring owners make unreasonable claims in regard to party-walls, and the example of an actual case may be of use.

"NEAR WOODSTOCK TOWN IN OXFORDSHIRE."

LONDON, August, 1881.

PROBABLY few of our readers know the county as compared with the city of Oxford, and, thinking they may not be without a certain interest to the architectural portion of the Americans, who yearly visit the University, we send some notes of a few days spent in its immediate neighborhood. The whole county is so full of interest to the architect and the archaeologist that the difficulty is where to begin and where to leave off. The shire teems with old churches of all sizes and dates, each with its special features and special instruction, till we have the whole varied history of English church architecture mapped out in the villages and hamlets around us.

Arriving from Oxford late one August evening at a bright little country town, on the way to our hospitable headquarters we pass its fine old parish church, looking grand and solemn in the starlight, and make a mental note to improve our acquaintance with it on the morrow. The morrow, however, has other things in store; our kind host is full of plans for several to-morrows, more, we sigh to think than we are likely to find time for; ultimately it is decided in family conclave that we begin with Blenheim and Woodstock, and to Blenheim next morning we duly set forth. It is a bright autumn morning; the country is looking its very best, and we are a very pleasant party thus thrown together as travelling companions for the next few days. Our host is quite an antiquarian, and his accurate knowledge of the county soon proves of the greatest possible service. He not only knows how to go, but, what is more to the purpose when time is short, *where* to go. Architecture is of course represented, while the refining element is there in the presence of our fair young hostess, bent on getting up her architectural knowledge from a sisterly regard for her younger brother just entering on his professional career. So we bowl along in our light carriage till "Peter"—that is, our pony,—is pulled up at the gate of the old church of North Leigh. Cruciform in plan, with some interesting Early English work and a little bit of so-called Saxon in the belfry windows of the tower, its chief attraction is a beautiful fifteenth-century chantry chapel on the north side of the chancel. The windows, which have still some of the old glass in them, the shafts, the arcading, and the vaulting are all most carefully detailed and of the best period. It has at one time been all colored and decorated. The founder's tomb is under an arch opening into the chancel, and taken altogether this is one of the most perfect little "bits" of Perpendicular to be seen anywhere. A short distance from the church is the site of the Roman villa excavated in the years 1813, '15, and '16. All that is now to be seen of this once extensive house is the remains of a bath-room with its bath in position, and a splendid mosaic pavement. The latter is one of the finest examples yet discovered in this country. Underneath the floor are the heating pipes and tubes, most of them in their original positions, while the bases and caps of the columns lying about, show it to have been a chamber of some importance. The place is covered over with a somewhat rude structure to protect it from the weather. A woman from a cottage hard by comes with a mop and a bucket of water, and after the manner of marble-cutters with their marbles freshens up the colors for our benefit. Thus brightened up we find that both in color and design this pavement is remarkably good, and learn afterwards to our regret that another somewhat similar was gradually taken away by visitors shortly after it was first exposed,—in less than a week, it seems! This villa was built on the most extensive scale, and plans have been published of it from measurements taken at the time of its excavation. Remains of several other Roman villas have been found in the same district, the Romans having had a camp in the neighborhood. Our talk is of Roman times as we return to our carriage, and in a short time we drive into the magnificent park of Blenheim. Scotch cattle and fallow deer browse under the splendid trees. The oaks are a special feature among the foliage, and the whole place seems boundless in extent. Presently the great lake, one of the glories of Blenheim, comes into view, and we drive on to the bridge that we may enjoy the prospect. Before us stands Sir John Vanbrugh's mighty pile, picturesque even in its greatness. The site is well chosen, and the palace looks very impressive as the changing sunlight now warms the tints of its yellow stone-work, or the intervening clouds tone them down into grays. The design consists of a central mass (supported by columns of the Corinthian order) with advancing wings forming three sides of a quadrangle, the fourth being open to the great park. Chimneys and towers are grouped about, breaking up the sky-line without destroying the general repose of the work, and if we may take exception to some (indeed a good deal) of the detail, still there is a stately grandeur about the whole which convinces us that Vanbrugh knew very well what he was about. At some little distance, over the bridge and right in front of the house stands the monumental column, or pillar of victory, with the statue of the hero of Blenheim in a triumphal attitude on top of it. As we afterwards find, this site is admirably chosen, as seen from the windows of the palace. All around us are lovely views of wood and water. The great lake fills a broad and deep valley adorned with rich verdure on every side, and again the vastness of the place strikes the visitor. The bridge on which we sit, built in the days when architects and not engineers designed our bridges, is a most handsome structure,—fortunate in beauty of position, perhaps, but at once stately and picturesque: in itself one of the special features of the place.

However, there are other things in the world to think about besides bridges and palaces, and one of them is luncheon. Several hints have been given, and various inquiries made as to the contents of a certain basket which our young housekeeper produces from somewhere or another, and soon the question is as to the relative merits of sandwiches or gingerbread, and the flavor of a particular Marsala. The chat drifts away to the story of fair Rosamond, whose bower stood a little distance off on our right, and whose well still flows with clear water by the banks of the lake on our left. I'm afraid we are all in sympathy with the beauty and against the "jealous queen," as some one relates how the latter gained access to Fair Rosamond's bower by means of a dropped ball of silk and compelled its lovely inmate to drink poison on the spot. In later years sad love memories must still have lingered round the neighborhood, as witnessed by the mournful fate of another fair ladye in the old ballade of "Near Woodstock Town." We are suddenly recalled from the sublime to the ridiculous, however, on driving up to the entrance gateway of Blenheim, by the pomposity of the porter, who declares we can't be admitted without "a *horder* from 'is Grace." As His Grace is fishing off the north of Scotland, our host writes a note to the duchess, and we go off to look at the church of Woodstock. Not much of the old work is left,—it has been restored by Mr. Christian,—perhaps there was not much to leave; the tower has been rebuilt in eighteenth century classic. Woodstock is a bright little place, principally built of stone, with gray slate for its roofs. The entrance to Blenheim from Woodstock is under a gateway with Corinthian columns built by the great Duchess Sarah. On our return to the palace we are admitted by special favor, Saturday not being a visitors' day. Under the guidance of the pompous porter we are escorted across the court-yard to the main entrance under the portico, and handed over to the care of another very high and mighty personage, the housekeeper, who forthwith conducts us through the rooms. The entrance hall is the full height of the building, and has its ceiling painted with figure subjects by Sir James Thornhill. The library is a very fine room, long and narrow, with a bay-window in the centre of its length, like the long galleries at Hatfield or Knowle, and is a couple of stories in height. Portraits of the Marlborough family adorn the walls, and the cases are filled with books. Along the garden front are a series of saloons, drawing and dining rooms, handsome apartments; two or three of them have their walls hung with tapestry recording the campaigns of the great Duke John, and others contain many valuable pictures by Rubens, Titian, and Raphael, a Madonna by the latter being among the treasures. The china cabinet is also one of the sights, the collection being very large and costly. Some of the specimens of Nan-kin blue and white are particularly fine. The staircase is disappointing, being more like an overgrown back-stair than the noble feature one expects to see in such a palace. Having entered our names in the visitors' book, we are handed over to a gardener, who takes us all over the private gardens. They are really very fine indeed, quite the most lovely thing to be seen at Blenheim. The cedars here are celebrated, some of them measuring more than twenty feet in circumference, of many varieties, and all good. In the grounds is erected a pretty little temple to Diana designed by Sir William Chambers. At the western end of the lake the waters are narrowed and pour over a picturesque cascade into an ornamental lakelet below. Its banks are adorned with flowers and shrubs, with fountains, summer-houses, a water temple, ferneries, etc., forming one of the most delightful prospects imaginable. Its beauty, heightened by the warm glow of the late afternoon sun, formed a picture never to be forgotten; we were loath to depart, and lingered as long as possible. As we wend our way back to Woodstock one begins to contrast Blenheim with Versailles and such other places, but though small in comparison with the great French palace, it is in many respects more lovable, particularly the gardens and the lake; the latter would be difficult to surpass anywhere. We drive through the park again on our way home, past High Lodge, said to have once been a residence of the handsome but profligate Earl of Rochester, and through a fine undulating country. "Peter" has got his nose towards home and goes along at a great rate, his young mistress, who has now got the ribbons, doing a particularly smart bit of driving down one of the hills. We are fast leaving the glories of Blenheim behind, and beginning to think of dinner awaiting us in front. Our host has taken to smoking, which by-and-by becomes contagious. I think we even begin to gossip as we pass the house of some one said to be "disgustingly rich,"—wondering whether he would care to give any of his money to lay open again and preserve the Roman villa at North Leigh, as has recently been done at the Isle of Wight, until, picking up a friend and brother who had come out to meet us, we rattle up to the bridge leading to our quiet Oxfordshire home, thoroughly pleased with the day's excursion.

The next two days were devoted to old churches. First, Coggs, about a mile from Witney—a most picturesque old place—a jumble of all styles, but chiefly remarkable for a chapel called "The Blake Aisle," a fine specimen of fourteenth-century work. The four-light east window of this chapel is unique in its way. Its head is not arched, but raking, rising a little from each side towards the centre, and filled with very good decorated tracery; we do not remember a similar example anywhere. Another noticeable feature at Coggs is the octagonal tower at the northwest angle of the nave, a most unusual treatment, and well worth sketching. The church of Minster-Lovell is the next on our list, a complete example of a fifteenth-

century country church, almost untouched by any subsequent work of any kind. It is cruciform in plan, with deep transepts, and a fine tower at the crossing. The planning of this tower is most instructive. The nave being wider than the chancel, and the tower being the width of the latter, the two eastern piers are attached to the angles of the chancel and transept walls, while the two western piers stand clear, with tall, narrow arches connecting with the angles of the nave and transepts, and carrying a buttress outside, exactly like a flying buttress in principle. The tower is then vaulted over, above these arches, and the effect is very striking. The old roofs are still in position, and some of the pewing. There is also a very good north porch: indeed, the whole of the work in this church, probably built about the middle of the fifteenth century, is good, and very well detailed. It would be difficult to find a more complete example of the style on the same scale, and is well worth most careful study. We have said it is almost untouched; recently Mr. J. L. Pearson, R. A., has carried out some work in the interior, viz., a very fine reredos, splendidly designed and carved, new chancel stalls, and a stone pulpit, all in Mr. Pearson's best manner, and thoroughly in keeping with the style of the church. We had almost forgotten to mention also two remarkable "squints" from the deep transepts into the chancel, to command a view of the altar. It is seldom one sees these features so fully developed as at Minster-Lovell, where they almost become small arches.

Adjoining the church are the ruins of the manor-house of the Lovell family, once the residence of the Lord Lovell of the old ballad, and leader of the insurrection in favor of Lambert Simnell, the pretended Earl of Warwick, against Henry VII. After his escape from the battle of Stoke he was supposed to be drowned in the river, but his skeleton was afterwards discovered in a secret chamber seated at a table with an empty barrel and pitcher beside it. The manor is about the same date as the church, has been very extensive, and is also of the same bright character of work. Many of the details, such as the windows and porch, are worthy of close study, and the gateway from the manor into the church-yard, with its vaulted ceiling, is a charming bit of design.

The fine parish church of Witney next claims our attention. Its most striking feature is the noble Early English tower and spire over the crossing, one of the finest examples of such a central tower to be seen anywhere. The rest of the church has been nearly rebuilt at sundry times and in divers manners. It was also restored some years since by Mr. G. E. Street, R. A. The chancel is still Early English. The north transept is fourteenth-century, and very good; while Perpendicular windows have been inserted almost everywhere, or portions of it gradually rebuilt during that period. Some of the detail is very good, much of it again of indifferent character. The remains of some vaulting suggesting different levels in the floor of the north transept is interesting from an archaeological point of view, though the purpose thereof is by no means clear. There is said to have been as many as fifteen altars in this church, which is almost of the dimensions of a small cathedral. There are several other noteworthy features and many interesting bits, on which our antiquarian host has much to say as we explore the interior under his careful guidance; besides, we are at home here; it is our parish church, and we have every reason to be proud of it. Some of the restoration is not perhaps as happy as it might be, — particularly the reredos, — but we hope to rival Minster-Lovell in this respect some day when funds come in. Our fair hostess propounds something about a "sale of work," etc., but as it is only in the talking stage as yet, we mercifully escape the snare of the fowler, — all except one, that is, — he, poor fellow, is in the throes of painting a view of the old church as his contribution towards the future reredos.

After this we find our way to Ducklington Church, where there is a south aisle in fourteenth-century work. Sculptures, ball-flowers, and beautiful traceried windows, with the old roof intact, all in the best period of the style, and beautifully detailed. A few miles farther on, and we come to the interesting church and remains of the manor-house of Stanton Harcourt. They cover a great extent of ground, and there is much to be seen; more than can be embraced here. The church has a very fine Early English chancel, very well proportioned and admirably detailed. It has not been restored, and is half smothered in whitewash, still it is a noble piece of design and of great interest. On its south side is the Harcourt Chapel or aisle, the burial-place of the Harcourt family. It is fourteenth-century work, and as good as the chancel in its style. Here are monuments and tombs of the family from its erection down to the present day, and it is curious, if not instructive, to notice how they pass through the various phases of mediæval times to Queen Anne and Renaissance, through the Greek revival and the Gothic revival to the last, which is a modern bust. There are some very fine eighteenth-century wrought-iron gates to this chapel well worth attention in these days of the revival of such work. The manor has been of great extent, but only part of it remains. It seems all of the fifteenth century, and very good indeed of its style. The old gate-house and the rooms connected therewith are still inhabited, but a good deal altered about. Close to this is the splendid kitchen; it is square in plan, of great height, and covered over with an octagonal open-timber lantern and roof. The lantern part is open all round, and had an arrangement of shutters by which the ventilation could be regulated to suit the direction of the wind. The smoke must also have escaped by the openings in the lantern, as there do not seem to be any chimneys. Round the lantern externally are battlements reached by a

turret staircase in one angle. This is even a more interesting work than the well-known kitchen at Glastonbury, and presents a much more striking appearance externally. At some little distance from the kitchen is a very fine tower known as "Pope's tower," from the circumstance that the poet occupied one of its upper rooms and finished part of his Iliad there. The private chapel of the manor was in the ground story of this tower, and has been rather vulgarly restored some little time ago. The tower has battlements like the kitchen, and well-designed two-light windows at intervals. The roof is flat, from which a good view of the arrangement of the manor and of the church is obtained. Not the least interesting sight at Stanton Harcourt are the old fish-ponds, in which there are still some famous fish. The water, with its beautifully wooded banks, adds much to the beauty of the place, and affords opportunity for several charming views, particularly from the east, with the water in the foreground, the church in the middle distance, and the manor, with Pope's tower and the kitchen, in the background, while all around are lovely verdure and stately trees. The ponds are quite numerous, and most ingeniously arranged.

Once more a drive of a few miles, to near where the Windrush joins the Thames, and we arrive at Standlake Church. It is a late church, and has several peculiarities. The floor is all on one level throughout, there being no steps from the nave to the chancel. The western tower is octagonal from top to bottom, and its treatment is very interesting. We saw the church, however, under difficulties. The weather, which had been threatening all day, broke at last, and the light was failing; so much so that we had to explore the interior with lamps which the vicar kindly lent us. The church has been restored; the new pewing is said to be a copy of the old, and all the bench-ends have splendidly carved figures by Henry Hems of Exeter: the women of the New Testament with other saints on the north side of the nave, and prophets and apostles on the south. The pulpit is also of carved wood-work, with subjects of the four evangelists, etc., by the same artist, all of very high-class workmanship and design. We must have looked rather a comical lot as we prowled about (sometimes on our knees) with a lamp, looking at the carvings. Meanwhile, the rain outside had come on in earnest, so taking leave of the friendly vicar, we bundled into the carriage as best we could. We hoisted the "great gamp" and several other smaller fry of the same tribe, making a kind of tent which ever and anon we carefully opened for a look ahead, while "Peter" pegged away gamely in front. Outside the rain was coming down in sheets; inside we were rivalling Mr. Mark Tapley himself in being jolly under the most depressing circumstances. Our host was driving in a style which only a knowledge of the roads could have warranted, as half of it must have been sheer guess-work. Several times we made narrow escapes, only just in time becoming aware that "something was coming" when the "something" instantly went past. The shadows of night were getting deeper and deeper; we could hardly see each others' faces, but the glow of the never-failing pipe was brighter than ever, and notwithstanding the water running down each tent-pole in steady streams, it only seemed to add to the amusement. At last the lights of our "High Street," the house by the riverside and home. Presently our young hostess sits down at the head of the table, with a bright smile on her face, as if getting a thorough wetting was all part of the day's work, and not only that, but later on discourses such sweet music in sonatas and gavottes that, as your New England poet somewhere says, in some such words: —

"The night was filled with such music,
The cares that infest the day
Folded their tents like the Arabs,
And as silently stole away."

Our last day is devoted to Oxford itself, or rather to some new buildings in it. We have made such inroads on our kind host's valuable time, that we are obliged to forego the pleasure of his society and the benefit of his knowledge, but he sends a capital substitute, — an Oxford University man, who of course knows all about the ins and outs of the place, and besides is reading up on Political Economy, so is ever ready to enliven the proceedings (if such were needed) by holding forth on his favorite science, to the total discomfort of us poor votaries of art. For instance, he is meditating an investment in cartridges for a shooting-party on the first of September, and ingeniously tries to argue our young hostess into buying them out of "housekeeping" money, on the ground that the cartridges mean a certain number of partridges finding their way into a certain larder, and so effecting a saving of expenditure on some other article of consumption. Despite the logical sequence of the argument, she cannot be brought to see it; instantly pouncing on its weak point, she declares the "certain number" to be a perfectly unknown quantity, probably none at all, so with a little flick to the pony she is driving so steadily, the argument is summarily dismissed, and presently we enter Oxford *via* the seven bridges.

We make our way to the new Examination Schools now building in "the High," from the designs of Mr. Jackson. The building is rapidly advancing towards completion. It forms three sides of a "quad," and is entered through the great hall fronting the High Street. This magnificent apartment is about 60 feet by 30 feet, and is two stories in height. A great feature in its design is the gallery at the first floor level for communication between the rooms on that floor. It is lighted by great mullioned windows in the side next the street, and covered with a splendid oak roof having a lantern in the centre. Behind the hall are the schools, the *via voce* rooms on the

ground-floor, and the writing-rooms on the first floor. Three of the latter are of large size, and will accommodate from one hundred and sixty to two hundred students each. They are panelled in oak and have highly enriched plaster ceilings. The staircases and waiting-halls are also special features of the design, the principal staircase being particularly fine. It is adorned with many rich marbles in columns and balustrades, elaborate plaster ceiling, and handsome wood-work. The wealth of thought and design lavished on this building is astonishing; nothing seems too trivial for its architect's skill. The result is not only one of the most important in point of size, but one of the most artistic works that has been erected in Oxford for years past. The style is a very free treatment of classic: "Queen Anne" it will probably be popularly called, but handled with a vigor and invention that is quite refreshing after the many rapid productions of the style we have been treated to of late. The University is to be congratulated upon the acquisition of such a public building, and its architect on his success. We beg to commend it to the attention of any of our readers who may be visiting Oxford, as well worth careful study. We must not omit to acknowledge the courtesy of Mr. Jackson's clerk-of-works, who took us all over the place, and explained everything he thought likely to interest us. He told us the cost would be under £80,000; cheap at the price, we could not help thinking, for such work as this. The High School for Boys has also been recently finished—or rather the first installment of it—from the designs of the same architect. It is in the same style as the schools, and of course looks plainer by contrast, but the central gable, with the entrance and staircase in it, is, in its way, equal to anything on a similar scale at the larger building, and quite worthy the art-power of its designer. Mr. Jackson has had opportunities, and has certainly made a splendid use of them.

Mr. Gilbert Scott is engaged on a new block of buildings at St. John's College: quiet, thoughtful work, in fifteenth-century Gothic, quite in keeping with the old work at Oxford, and full of the same spirit.

A walk through some of the gardens, such as Worcester, and Magdalen, and St. John's, was not to be resisted; they were looking, if anything, more lovely than ever. How do they get such wonderful turf at Oxford? It seems like veritable velvet, positively a pleasure to walk over.

Many of the streets of the town are "up" that tramway lines may go "down." Fancy tramway-cars running down the High! It sounds almost like profanation, and we shall expect to see the "quads" under the glare of the electric light next. We turn into the old Roebuck, thinking how harshly the new jostles the old in such a place as this, and pray that it may never improve it off the face of the earth altogether. There is little time for sentiment, however. We have to get a fiddle-string at "Hap's" in view of some trios this evening, and assist in the latest craze by helping some one to select a lawn-tennis racket. The latter is not at all so easy as it looks. We try nearly every one in the funny little shop, listen to sage remarks on shape and weight, cork and cedar handles, but ultimately a sixteen-ounce is found best to suit the hand that is to use it, and we march off to begin our twelve miles ride home. The political economist takes the reins. It seems his cartridges are on board; can it be possible our house-keeper has been "got at," after all the argument of the morning? Be that as it may, he takes a wonderful amount of care of her during the journey, is in his happiest vein, will even talk on art if we would let him, which it must be acknowledged is a tremendous concession to the failings of the majority; and here we are at home once more in a surprisingly short space of time.

Another evening of delicious music, one more pipe over the adjourned debate on political economy, a long run down the valley of the Thames to town, and the little holiday is over.

THE FAIR OF THE MASSACHUSETTS CHARITABLE MECHANIC ASSOCIATION.

CHARITY covers a multitude of—other things than sins, and of all benevolent persons the mechanics of Massachusetts seem to be the most charitable and cover the utmost range, for they have offered the hospitalities at their command to a multitude of persons and things which one would never think of associating with the hard-handed sons of toil. Perfumery and engine-grease! Fine dress-fabrics and toil-stained overalls. What obvious connection is there between them? The missing link is probably to be found in the fact that mechanics have wives, for whose entertainment and instruction a much larger portion of the new exhibition of the Massachusetts Charitable Mechanic Association seems to have been given up than the ostensible objects of the association would seem to warrant. Whatever the cause the ground-floor of the main hall in the early days of the fair had rather a bazaar-like air and seemed to invite one to make a mental calculation of the contents of his pocket-book rather than to rouse up his faculties to the task of taking in some of the marvels of mechanical skill which are always to be found at these triennial fairs. The first thing that struck the eye of the visitor as he entered from the east helped on the delusion that a shopping tour was before him, for there in one of the posts of honor was the two-story bazaar of the retail dry-goods house of R. H. White & Co., of Boston, the most pretentious exhibit in the building and as far as the bazaar itself went, well worth stopping to consider and attempting to discover whether the designers, Messrs. Peabody & Stearns, were trying to devise a half-timbered construction after Belgian or Eng-

lish prototypes, or a pavilion in French or Italian Renaissance. The structure is replete with pretty conceits, which, owing to the injudicious coloring are to a degree obscured, and the general effect is rather depressing in spite of the rough-cast panels plentifully besprinkled with bits of colored glass. Fortunately we saw it before it was painted, when the delicate stucco-work in panels, corbels, belts and frieze told for what it was worth, and the air of the whole composition was sparkling and lively. Evidently Messrs. White & Co. have full faith in the benefits that can derive from an exhibition of this sort to be willing to expend so much money on a temporary structure.

Not the least interesting study that such an exhibition affords is the way in which participants show their appreciation of the real advantages of such a free advertising of their goods, and the degree of enthusiasm with which they act up to their convictions. The doubters make a half-hearted attempt and a deal-table with an ordinary show-case on it is good enough for them, while the thorough-paced believers seemingly find no cabinet-work too expensive for the enclosure of their wares.

It was a little difficult to determine whether the apparent want of classification was caused by the absence of a large portion of exhibits at the time of our visit, or whether this lack of arrangement actually exists. A building so well conceived for exhibition purposes as this, and containing such a multiplicity of parts, would seem to lend itself to the most precise classification of its contents. At any rate, whatever degree of order the presence of the now absent exhibits may hereafter reveal, there seems to be little excuse for the scattering through the building of those exhibits which should find a place in that section with which our readers are most interested, a section which the authorities have made special efforts to make attractive. For instance, why should the model exhibiting McCoy's Elastic Soapstone Roofing stand cheek by jowl with spool-silks and cottons, a dozen rods away from the section where it belongs? or, why is Jacobson's Cabinet-Maker's Bench divorced from the society of the tools which are to be used at it and which are to be found in another part of the building? or why, again, does one find models of elevators in different corners instead of brought together into one group? Have the authorities been oblivious to the interests of the special exhibit they have undertaken to make, and consulted, rather, those of the individual exhibitor? If so, they have made a fundamental blunder and have seriously handicapped their exhibition of building materials. We trust that it is not too late to change some of these exhibits and make new assignments of space where necessary. This scattering, which may perhaps benefit the exhibition as a whole by distributing its points of interest over the widest possible area is the more inconvenient for those who go to study up a special series of exhibits and have only a limited time to devote to its inspection, because there is no catalogue provided,—a catalogue which it is fair to suppose would be properly classified according to the nature of the exhibits, or at least alphabetically arranged,—which would make impossible the blunders, which even those possessed of the finest possible topographical instinct must now make in the search for the things they wish to see, and feel morally certain must have a *locum standi* somewhere in the building.

In our short tour through the half-filled building enough was seen to warrant the expression of the belief that the exhibition will be well worth frequent visits when it is fairly under way, and it is fair to assume that the most lasting impressions made on our own mind were made by the most intrinsically artistic or interesting of the exhibits at that time in place, and as we do not intend now to attempt a minute examination of the articles and processes exhibited, or even to make a catalogue *raisonné*, we may without detriment or prejudice to what we may hereafter say, speak of a few of these impressions. In the middle of the main hall is the combined exhibit of the Household Art Company, the Magee Furnace Company, and the Messrs. Low, to the manifest attractions of which we may assume that the Messrs. Low contributed the tiles, the Magee Furnace Company the cast-iron reproductions of armor, *patera*, etc., while the Household Art Company is responsible for the arrangement of the articles, the colors of the backgrounds and mountings, the sign-boards and the severely simple mantel-piece which affords an excuse for some of the tile-work. These tiles are unquestionably artistic and have much of the same property that good Japanese work has. The eye can rest on them unwearyingly, satisfied with and rested by their harmonious coloring and dumbly conscious of their merits of design. There is nothing about them that urgently insists on close examination, but when once the attention is aroused inspection only reveals the excellent quality of their design and execution. As for the castings of the Magee Furnace Company, which, we believe, owe their being to the suggestion of the Messrs. Low, we cannot dissociate them from the cleverly colored plaster casts of the same or similar pieces of armor, platters and vases which were so common a few years ago and which can still be found. If the founders intend to devote themselves to the reproduction of unexceptionable specimens for museums and private collections, well and good; but if it is their intention to flood the market with spurious *objets d'art*, to be hung up in the hallways, the parlors and libraries of the would-be fashionables and "aesthetes" to keep in countenance the false coats-of-arms blazoned on the carriage panels of their owners, we must deprecate this new feat of art industry. If the founders had shown us a base-burner stove, the panels of its sides decorated with a reproduction of the forging of the armor of Achilles, or a set of fire-irons whose handles repro-

duced a dagger-bilt by Benvenuto Celleni, we would much more willingly have applauded their ingenious enterprise.

A more attractive and brilliant display than that made by the Mordock Parlor Grate Company it would be difficult to find in any part of the building, and the workmanship of the articles shown ought to satisfy the most exacting architect or owner, and taken in connection with their exhibit in the neighboring fair, the New England Manufacturers and Mechanics' Institute, betokens an exceptional command of resource, capacity and executive ability.

One of the most creditable exhibits, — one, too, which the visitor needs to be told is an exhibit, is formed by the elevators and their engines built by the Whittier Machine Company which are in constant use for the convenience of visitors. The perfection of the workmanship of this firm is indicated by the fact that after the apparatus was put together in the building no trial was made to see if its parts were in perfect working order, but their first movement was made when, the fair being declared open to the public, steam was turned on and the elevators were put into the instant service of that public.

What instinctive premonition should cause a visitor to go down into the basement in search of missing fragments of the builders' exhibit it is impossible to say, but should any such feeling lead him downwards he will find himself in the midst of a labyrinth of stoves and furnaces, chill, cold and forbidding, — and for the most part unintelligible, for there are few show-men in attendance, no sections of the apparatus and no drawings illustrative of their construction.

Beyond these, in a part of the building admirably suited to their display, are to be found such plumbing apparatus as are yet installed, most of them in working order, so that they can be fully examined and tested. Perhaps of all the exhibits the one most to the purpose is that of the Wight Fire-proofing Company, which is at once complete as showing the various applications of the process, instructive in its interesting features, and comprehensive and workman-like in the manner in which the exhibit is prepared. As one examines it one feels how other exhibitors have failed to comprehend the possibilities of the occasion and keenly regrets their inaptitude. The present absence of other exhibits of fire-proof material makes this display the more conspicuous. One cannot but believe that here is one of the nearest approaches to strictly fire-proof building that has been achieved. The tests which are to be made will show what ground there is for the belief that fire-proofing is possible and that the utmost that can be attained is not, as is believed by the Boston Manufacturers' Mutual Insurance Company, a "slow-burning" construction.

This insurance company makes an interesting display of many of the devices it obliges its members to adopt in their mills before they can be admitted to the benefits of association. A similarly instructive display, — to be found quite *par hazard* in another part of the building, — is made by the United States Government, who contribute a variety of articles that have been tested by the great government testing-machine at the Watertown Arsenal.

CEMETERIES REFORMED. — II.

MAUSOLEUMS.

In place of costly out-door monuments, mausoleums are to be substituted, surrounded by burial sections and ornamental grounds, and built in a most durable manner, for the sole purpose of providing near the family burial lot a permanently protected place for the reception of monuments and works of art in memory of the departed.

The mausoleum might contain as many family chapels or alcoves as the site would permit, these chapels to be erected with their monuments, statues, and memorial tablets, upon an elevated solid stone base. Steps lead from each front to the wide nave or central passage which extends through the entire building. The chapels are to be about 10 feet by 10 feet in width, and 16 to 18 feet in height, with 500 square feet of wall space in each chapel for tablets, mural plates, bas-reliefs, etc. The window in each chapel may be used for stained-glass memorials, the ceiling for fresco-paintings, and the floor for mosaics, all in memory of the departed.

The idea of protecting memorials in this form was first suggested to the writer by a handsome out-door monument in Cedar Hill Cemetery, Hartford, Conn., a perfect work of art, designed by R. M. Upjohn, and executed by Moffat, which had to be protected during winter by board casings, which concealed the monument for a large portion of the year.

No frost nor rain will deface the memorials and sculptural works in the mausoleum, no stranger can touch them, and everything within the walls of the chapel is protected for all time to come. Each chapel has an open front to the nave, which is separated by an iron ornamental grill of six to eight feet in height, allowing the visitors a full view of the interior. Each mausoleum contains a janitor's or watchman's room, also a waiting-room for visitors, with directory-tablets on the walls. In regard to the cost of a family chapel, it may be said in general that this need not exceed the expense of a respectable out-door monument. The saving in area for a family lot, as well as the cost of out-door monuments, would give a larger amount than necessary to secure a permanent family chapel in the mausoleum, and by this system the family could be represented for many generations, even if the same should occupy different family lots.

In less expensive mausoleums, arrangements should be made for lot-owners to secure one-half of a chapel or the space of one side of a

wall or even so many square feet for family tablets. The expense in every instance is less than that of an out-door monument which lasts but a short time. The chapel monument need not be as heavy nor as large as those out-of-doors nor does it require a foundation.

And of what value would such mausoleums be to coming generations! The millions spent annually for monuments out of doors in this country would all be saved, the best talents could be employed to execute sculptured works, and the accumulated memorials in our cemeteries would become in time a national school of art in the highest sense of the word.

Cemeteries, no more blocked by the thousands of head and foot stones, shafts and obelisks, would assume a perfectly park-like character, and the lawn system of our pioneer, Adolph Strauch, could then be carried out to perfection.

In regard to a possible perpetual character of the burial-lots, of course it is understood that the opinion of coming generations would decide the question whether or not the grounds should be used for reburials.

The reform provides burial-grounds for a hundred and more years, within a limited area, and with such arrangements in its system as to make a reoccupation practicable.

To the present and the following two generations the benefit of the reform would be a highly beautified burial-ground of a new character, and second, an economical system which secures and preserves our monuments and memorials for all time. To the several reasons stated in favor of a centralization of cemeteries for large cities another important point secured by the reform may be added, and that is, the establishment of steam and horse car communication between the cemetery and the chapel depots in the different districts of the city, from which specially-built funeral horse-cars could conduct the remains and the mourners to the cemetery for about one-tenth of the present cost by hearse and carriage hire.

The acreage of a central burial-ground under this system determines the number of graves admitted, or *vice versa*, allowing ample grounds for ornamental purposes, for mausoleums, chapels, gate-lodges, receiving-vaults, etc.; also grounds for subdividing the different denominations, either by open lawns or by belts of irregularly-planted trees and shrubs. Each respective denomination under the reformed system could have its separate entrance, gate-lodge, chapel, mausoleum, and receiving-vaults, as well as its own board of directors.

SUBDIVISION AND A PERMANENT UNDERGROUND GRAVE-MARK.

One of the principal features of the proposed reform is an economical subdivision of all the grounds devoted to burial purposes in the cemetery. An accurate survey should be prepared for each section separately before family lots are marked off; the section to be first subdivided into grave sites by a system of tiers running parallel with the border of walks or boundaries. This subdivision is to be based upon one or more permanently established base-lines fixed by monuments in the ground, in order to facilitate at any time the staking out or tracing of each and every grave on the section. An irregular belt of ornamental grounds should enclose the sections with trees, and groups of trees on the lawn and the borders, for the purpose of creating a park-like appearance of the same, should be held as land in common, and should be designated as permanent reservation-grounds.

Upon this fundamental base family lots are then marked off. They should not be sold by the square foot, as heretofore, but by the space a grave occupies in the tier. The intention is to allow every family a sufficient number of graves, either in one line if not exceeding, say, six graves, or in a group formed by two or more tiers adjoining. Any number of graves can be secured by one family in one group, but in case of an unexpected demand for more graves than first selected, if unable to extend the lot, it would not be very objectionable to occupy a second lot on the same or an adjoining section for the additional graves, as long as all its members are represented by memorials in their family chapel of the mausoleum. No family lots should be allowed to be enclosed. At an average, about twelve burials are made in fifty or sixty years by a family before all interest in the lot ceases. The space calculated by the proposed new system for each grave is 3 feet by 8 feet, or 24 square feet; the grave proper averages 2 feet 6 inches by 7 feet, while the coffin occupies about 22 inches in width and 6 feet in length, leaving a space of 4 inches for sand as a permanent grave-mark all round the coffin, and a solid partition of 6 inches of the natural soil between two adjoining graves, when the second series of interments has taken place in the spaces left between the first series of the family graves.

The horizontal slabs indicating the location of a grave should be as small as practicable; large stones destroy the effect of the lawn. The inscription upon the slab or bronze plate of a family grave-mark should be plain. By the peculiar form or shape adopted, each family could recognize their graves easily.

What would mark for all time the location of a grave underground?

The reform proposes the use of clean white sand for a direct inclosure of the coffin, instead of the common soil or hard-pan dug out of the grave. An inclosure of four inches of white sand on each side, and a covering of six to eight inches on top of the coffin, which latter would need no outer box or casing, not only would make a compact, clean inclosure and a noiseless filling, but would — a consideration of much greater importance — mark the location and existence of the grave after thousands of years have swept over its surface and made it unrecognizable as such. And indeed, when we consider the

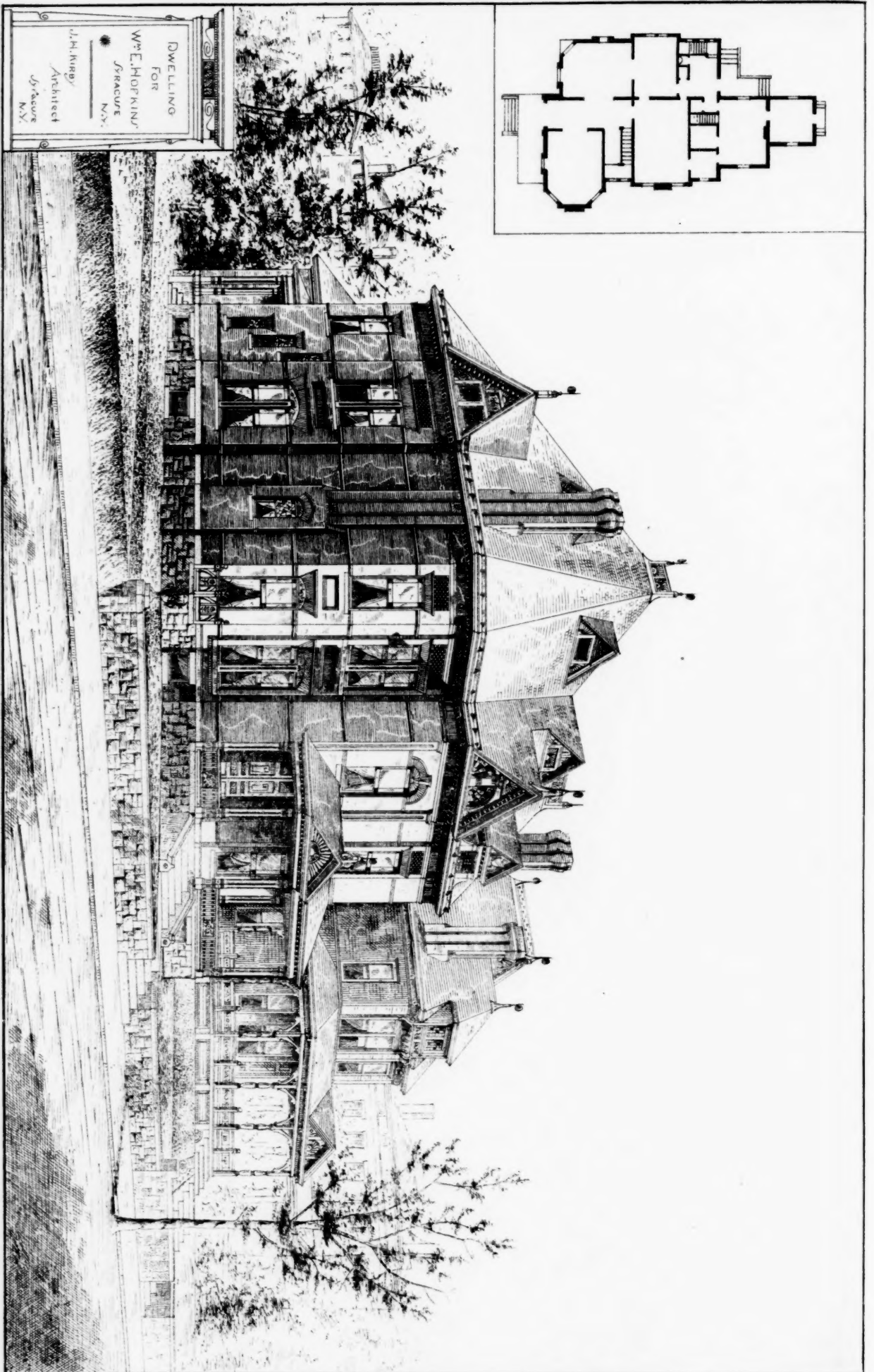
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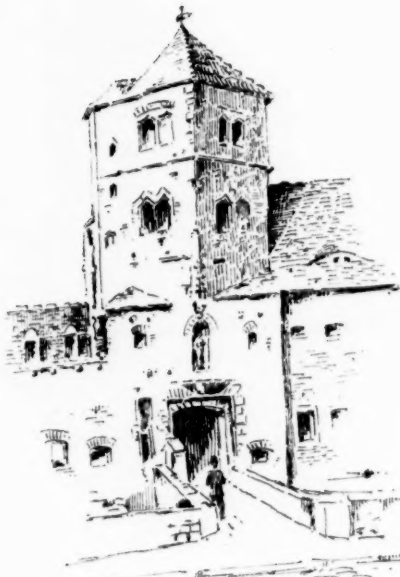
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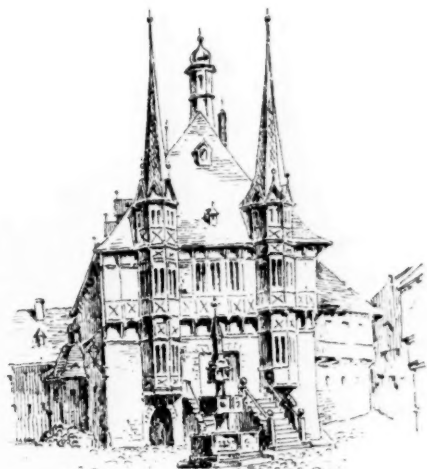
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COTTBUS APR. 1880



MUNSTER K. - ESSEN



CITY HALL - WERNIGERODER H.



TOWER - LIESENBOURG 1/4



ANDREASK. - BRAUNSCHWEIG 5



CITY WALLS - MUELLHAUSEN 1/4

- Bernard Vorreput. - arch.
N.G. Sept 1881.

facts that white sand will not change its color when below the action of frost; that surface water, which finds its way through the top soil, filters itself before reaching the depth of three feet; that after decomposition of the body, the surrounding sand retains its color on top and sides; and that the length and width of the original grave will be preserved, this simple additional improvement will be recognized without hesitation. The discovery of such a peculiar layer of white sand in the future, when every other sign of a grave is gone and all has fallen to dust, would be the indisputable evidence of a grave of the nineteenth century. And even for the present generation this method would prove to be a practicable one. How often does a grave-digger come accidentally in contact with an old forgotten grave? The imbedding of the coffin in clean fine sand would certainly prevent any possible disturbance which now sometimes proves to be of a very serious character.

Artificial incasings for the dead, such as the numerous patent cement, stone or brick graves are not desirable. Clean sand can be procured nearly everywhere. To imbed the coffin of an adult in sand after it is lowered into the grave would require about twenty-five cubic feet, at an expense, including the removal of all surplus soil from the grave, scarcely exceeding five dollars, or about the cost of the casing, which is not necessary under any circumstances.

INTERMENTS.

To reform the present system of interments, one question should be considered first: Whether the final ceremony at the grave is not repulsive and in sad contrast to the previous luxury of our funeral services.

Since the glory of Christendom enlightened the world, the ceremonies in honor of the dead have gradually changed from cruel barbarism to a solemn religious act inspired by hope and peace; so that to-day true Christian love follows the departed to his last resting-place. From the monumental decorations of the grave and the funeral ceremonies we trace the life and culture of past nations, while coming generations will read from our tombstones the history of the present. Our forefathers, a hundred years ago, were buried in the plainest manner; indeed, their funeral ceremonies were as simple and unassuming as their monuments, which in a few instances still lean over the grave. But time has advanced, and though the bitterness at the loss of a friend may not have increased, our sympathy and mourning is to-day more luxuriously expressed.

The parting from a dear friend at the grave forms one of those memorable hours in life which can never be forgotten. But when we recall this hour to our mind, a feeling of awe falls over us. We again see the coffin carried to a huge pile of excavated soil next to a ghastly opening, which is surrounded by a gang of laborers ready to hurry the casket into the grave, without the slightest regard for the mourners. Indeed, the sensitive and heartbroken mourner who escorts the remains to the last resting-place is overcome with a most painful feeling. The provoking scene at the grave forms too great a contrast to the taste and luxury with which we surrounded the departed; it is so provoking, that in many instances the funeral rites are shortened, if not dispensed with altogether.

While every effort was made to make the ceremony at the house and the church solemn and imposing, nothing of this is to be seen at the cemetery. We know how unceremonious and informal the final act of the funeral is, and therefore dread to approach the grounds.

A suggestion to abandon the old mode in Cedar Hill Cemetery, Hartford, Conn., was made about twelve years ago, and since that the writer has been informed that an apparatus for lowering the coffin had been introduced in Belgium, Austria and Germany, which proves to be what is needed, as it completely does away with the repulsive part of the interment rite at the grave, and brings harmony into the ceremony from the beginning to the end. It is reported that the apparatus has been satisfactorily tested by the municipalities of the cities of Brussels, Vienna and Berlin; that no laborers are required at the grave, and that the interment ceremony is no longer disturbed: except one assistant, the mourners are alone.

THE ILLUSTRATIONS.

CHANCEL AND VESTRY FOR ST. JAMES'S, ZANESVILLE, O. MR. W. C. HAZLETT, ARCHITECT, NEW YORK, N. Y.

FOREIGN SKETCHES BY MR. BERNARD VONNEGUT, NEW YORK, N. Y.

TOWER OF THE HOTEL DE VILLE, TREMONDE. SKETCHED BY MR. F. H. BACON, NEW YORK, N. Y.

HOUSE FOR W. E. HOPKINS, SYRACUSE, N. Y. MR. J. H. KIRBY, ARCHITECT.

LEGAL NOTES AND CASES.

Nuisance. — Private Burying-Ground. — Injunction. — Injury to Well.

AN injunction was prayed to restrain the owner of a private burial lot from making or allowing any future interments therein, on the ground that the well of the complainant might be injuriously affected therefrom. The court decided against the complainant, and said that burial-places are indispensable, and they may be the property of the public or of a private person, over which a just dominion may be exercised. It is an error to suppose that of itself a burying-ground is a nuisance to the immediate neighbors, and unless special circumstances are shown from which the court can be satisfied that future burials will most probably effect a nuisance to the injury of the complainant, for which there is no remedy at law, an injunction

to restrain interments will not be granted. — *Musgrove vs. St. Louis Church*, 10 La. An., 431; *New Orleans vs. Wardens*, 11 *Ibid*, 244; *Ellison vs. Commissioners*, 5 Jones Eq., 57; *Lake View vs. Setz*, 44 Ill., 81; *Lake View vs. Rose Hill*, 70 *Ibid*, 191; *Bergin vs. Anderson*, 28 Ind. 79; and see *Monk vs. Packard*, 71 Maine, 309. In this case the water running through the burial lot could easily have been diverted from the well by the complainant, and it may be that the defendant, if requested, would have made the ditch rather than to have been forced into this litigation. *Kingsbury vs. Flowers*, Supreme Court of Alabama, May 1881. H. E.

Negligence. — Damages. — Injury to Minor. — Father living.

For an injury to a child under age he can recover for the suffering endured, and for any permanent injury which will interfere with his capacity to support himself. His father can recover in a separate action for the expenses of the medical attendance, nursing, etc., and he can also recover for the net value of services of the child during his minority. *Menges vs. Marcy Creek Township*, Supreme Court of Pennsylvania, January 20, 1881. H. E.

Master and Servant. — Negligence. — Fellow-Servants. — Yard-Master and Assistant.

A yard-master of a railroad company, by a negligent order to the engineer to back his engine, caused an injury to one of his assistants who was engaged, under his orders, in connecting the cars, and it resulted in the death of the injured man. His administratrix sued the company, but she was defeated, the court deciding that the deceased took the risks of injury from the yard-master's negligence when he entered upon his employment; that they were fellow-servants. *McCosker, adm'x vs. Long Island R. R. Co.*, New York Court of Appeals, February 8, 1881. H. E.

Sale. — General Warranty. — Known Defects.

A general warranty of an article sold will not be considered as a cause of action for defects known to the parties at the time of making the warranty. *McCormick vs. Kelly*, Supreme Court of Minnesota, July 15, 1881. H. E.

Fire Insurance. — Verbal Contract.

The right to make contracts of insurance, like any other right of contracting, exists at common law, unless prohibited by statute, and the contract of insurance having its origin in mercantile law and usage the distinction which denies the power to enter into such a contract, excepting in particular modes and forms, is without foundation and repugnant to, and inconsistent with, that general capacity of contracting which the common law concedes to every person ordinarily competent to enter into binding engagements. *Bails vs. St. Joseph Fire and Marine Insurance Co.*, Supreme Court of Missouri, June, 1881. H. E.

Contract for Services. — Compensation to be Fixed by Employer.

The plaintiff rendered services to the defendant, a corporation, under a contract in which it was agreed: Butler enters the service of the mill company in superintending the mason-work of a mill, about to be erected by it, and the amount of his compensation is to be left entirely to the company to determine and fix after the services have been performed, at such price and amount as, under all the circumstances, it shall deem right and proper. The wages were fixed at \$2.50 a day, and it was found by the jury that the services were reasonably worth \$4.00 a day. The court below gave judgment for the amount as fixed, i. e., \$2.50 a day, and on the appeal it was decided that it "was the duty of the company to determine the amount of the compensation honestly and in good faith, and if it did so fix it, the obligation of the contract was fulfilled so far as that matter was concerned. Fraud upon its part cannot be inferred because the jury found that the services were reasonably worth considerably more." *Butler vs. Winona Mining Co.*, Supreme Court of Minnesota, July 29, 1881. H. E.

Official Signature. — Printed Signature.

It was the duty of the clerk of a board of supervisors to sign the resolutions of the board, and it was decided the board might adopt a printed signature. *Williams vs. McDonald*, Supreme Court of California, August 12, 1881. H. E.

Ejectment. — Title and Possession in the United States. — Jurisdiction of State Courts.

The courts of a State cannot entertain an action of ejectment brought to recover land of which the United States holds the title, and which is in the possession of their officers. *King vs. La Grange*, Supreme Court of California, July 13, 1881.

Patents. — Preliminary Injunction.

A preliminary injunction in a suit for the infringement of a patent should never be granted where the affidavits of the defendant show a reasonable doubt about the novelty or validity of the complainant's patent. *Illingsworth vs. Spaulding*, United States Circuit Court, District of New Jersey, July 23, 1881. H. E.

ON THE REVELATIONS OF SANITARY SCIENCE.¹

LET US now briefly refer to some of the more important principles which sanitary science teaches, premising that there are two distinct systems of sewer-construction, broadly distinguished by the phrases *sewers of deposit and sewers of suspension*, both having reference to

¹ Portions of a paper by Mr. Edward C. Robins, read at the Sanitary Exhibition at Eastbourne, Eng'land.

the water-carriage of excrementitious matter. The *former* is adopted in many great towns, and does not necessarily provide for the immediate removal of the soil from houses except in times of storm or very wet weather. At other times a system of flushing more or less intermittent is involved, owing to the absence of sufficient water for the carriage of the soil accumulations and refuse. The *latter* is adopted in some provincial towns, as Croydon, and requires the removal of the soil at once at all times of the year, or at least before the solid matters in suspension have had time to enter into that putrid state when sewage-gases of a most deleterious character are generated within the sewer. Obviously, the *former* system is one which, by providing for occasional storm-waters or heavy rains, over a large surface of land, as well as the ordinary house-sewage, necessitates the construction of vast cavernous sewers, which in dry weather (from the absence of adequate rainfall and sufficient flushing arrangements) constitute sewers of deposit, the emanations from which are often so deadly (owing to the insufficiency of ventilation) that disease and death are pent up within them, ready to find a way through every aperture into the dwellings of the rich and poor alike, so that the lives of the prince and the peasant are equally endangered by living in houses or hovels whose drains are in direct communication with the public sewer, unless those precautions are taken which it is the business of sanitary science to discover and to enforce. The *latter* system is one which provides a separate sewer for the storm-waters, or leaves them to take care of themselves and find their own way into the rivers and the sea, and thus necessitates the conduct of the house-drainage only in comparatively small pipes, the smallness of the bore concentrating the stream of water which carries with it the soil held in suspension along the narrow channel provided.

Mr. Chadwick, in his recent pamphlet, entitled "Circulation or Stagnation," quotes the address of Mr. F. O. Ward, at the Brussels Congress in 1856, on a system of sewerage involving the utilization of the sewage by irrigation, briefly summarized in the following description of a sanitary Arcadia:—

"The water which falls on the hills in a state of purity undergoes a natural process of filtration through sand, enters the rural collecting-pipes, and, passing through the aqueduct to the metropolitan distribution-pipes, finds its way to every story of every house in the town; when, again, after having supplied the wants of the inhabitants, it runs off enriched with fertilizing matter, which it carries away before allowing it time to ferment. This manure, driven along irrigation-pipes, is deposited in the soil, leaving the water to pass into the drainage-pipes, and flow on to the rivers. The rivers conduct it to the ocean, whence it rises as vapor under the heat of the sun, to re-descend as rain on the hills, enters again the collection-pipes, and recommences its vast and useful course of circulation."

In opening the discussion which followed the reading of my paper at the Royal Institute of British Architects, from which I have made the foregoing extracts, Dr. Corfield remarked,—"Mr. Robins has said that civil architecture can never be divorced from the experience of sanitary science. I would go farther than that, and would say, that if it were not for the experiments that have been made by scientific men, no alteration in principle would be carried out, not only in architecture, but in everything else. If it had not been for the chemist Pasteur, for instance, all the vine-growers in the world would never have discovered the cause of the destruction of their vines; the fowl-keepers would never have discovered the reason for the loss of hundreds of thousands of their poultry by chicken-cholera; and the prevention of the silkworm disease would have remained an unknown problem. And," he asked, "what is it that has caused us to think so much of *sewer-air*? There is one reason, and only one, and that is, that it has been shown by scientific experiment,—by the experiments of sanitary science,—that enteric or typhoid fever is produced by a constituent of that air; yet the public mind was not aroused to the necessity of preventive measures until one or two members of the Royal family suffered from that disease."

Sanitary science has revealed to us, by the positive experiments of its professors, the necessity of devising means for the ventilation or disconnection of the house-drains from the main town-sewers, because it has been shown that foul gases will pass through water, that on one side of the water in a trap they are absorbed, and on the other side they are given out, and that this process goes on continually. And if this is the case even when a house-drain is siphoned off by a water-trap, what must be the condition of those house-drains which are not trapped at all, but the sewer-air is laid on by these to the interior of the dwelling through any untrapped sink or closet, or leaky joint, and which the use of disinfectants serves only to conceal from observation, and to hinder the perception of the cause?

Dr. Frankland's experiments have proved that when water contains foul matter decomposition takes place in the water, and the surrounding air is contaminated by the bubbles of gas generated, releasing the infectious particles along with it, thus showing the desirability of intercepting man-holes to house-drains, even where water-traps exist, and demonstrating the fatal consequences likely to ensue when neither water-traps nor man-holes exist, which, nevertheless, is still the case in the great majority of dwelling-houses in the land.

Thus, through the revelations of sanitary science, mechanical appliances have been devised by the aid of which it is now quite possible, as Dr. Corfield has proved, to put a house into such a condition of safety that we can say with perfect certainty that, if typhoid

poison is in the main sewer, it will not get into the house; and, further, that if typhoid fever is taken into the house, when such preventive measures are taken it will not spread.

Sanitary science having first revealed the ready absorption by water of bad gases, as already mentioned, mechanical means have been devised by practical sanitarians to prevent the drinking-water in our cisterns and wells from becoming contaminated. It is common to find wells situated so near to cesspools that the water of the former is rendered impure and poisonous by the percolations from the latter. It is common to find the only supply-cisterns fixed over the closets for the convenience of having service-boxes in the same for their supply, and the trumpet overflow waste-pipe fixed in direct communication with the pan-closet or the soil-pipe.

Your exhibition teems with devices for overcoming these evils. Pan-closets are condemned, valves only are admissible; service-boxes are discarded; disconnecting waste-preventers are provided; the wastes empty into the open air, and, as a rule, a separate cistern for drinking-water is provided.

I have suspended on the walls the illustrations of Mr. Pridgin Teale's book, entitled "Dangers to Health," which will both amuse and instruct you; indeed, I know no better medium for opening the eyes of the popular mind to a right understanding of what to fear, and how to defend yourselves, than that very interesting volume.

Dr. De Chaumont has said that, parallel with the progress of medicine and the collateral sciences, advances have been made in sanitary science which amount to important revelations, so that it has become possible to lay down certain principles which, as we have seen, are capable of practical application to the great advantage of us all. Thus the dwelling in marshy districts has been proved, by incontrovertible evidence, to be usually followed by attacks of ague and fever of various kinds. That destitution and crowding give rise to typhus. That the withdrawal of vegetable diet produces scurvy. That small-pox, measles, and scarlet-fever are communicated by contact to otherwise healthy persons. And by equally strong evidence, though not so generally accepted, acknowledged, and acted upon, sanitary science reveals to us that, out of the 700,000 deaths which take place in one year in the United Kingdom, no less than one-third, or some 240,000 deaths, have been traced to those particular diseases which are liable to be favored or propagated by neglected house sanitation. In fact, the highest medical and sanitary authorities have decided that, by good sanitary appliances and surroundings, resulting in the maintenance of the purity of the air and water within and around our dwellings, typhoid-fever, diphtheria, sore throat, and cholera, might be rendered exceptional diseases, instead of being, as they now are, the fruitful causes of illness and death to the alarming extent these statistics attest.

Let us proceed to notice some further revelations of sanitary science. We have glanced at the cause and cure of defective house-drainage and water-supply, we will now refer to the nature of the subsoil. As I have said elsewhere, a damp site makes a damp house, not only by the surface dampness of the surrounding ground, but, as Professor Kerr has also pointed out, by the ground-air, which forces the moisture under and into the house, drawn forward by the very means adopted for warming the interior, which, by lightening the weight of the internal air, makes a free passage for the heavier cold damp ground-air in the direction of the least resistance.

There are two general divisions in classifying soils,—the pervious and the impervious. *Pervious* soils are those like gravel, sand, and soft limestones, which allow of the free passage of water through them, and if there is nothing to obstruct its free passage, and the level of the water in the ground is sufficiently deep, the upper surface upon which the house is built is always dry and healthy. If, however, the gravel has no deep outlet for the water which passes into it, owing to its being situated in a basin of impervious soil, so that the level of the water in the soil is brought very near the surface, then it is necessary to find an outlet for the accumulated water by artificial means, called land drainage.

Impervious soils are those chiefly composed of various clays, which do not allow the water to sink into their depths, but only suffer it to flow over their surface, and consequently the garden soil gets supersaturated, and if the land is level the water is long in getting away, and the evaporation of the moisture in and upon the soil produces a humid, damp atmosphere, very injurious to health, and requiring very careful surface drainage to overcome.

The public roads, fore-courts, and areas of town houses are usually well drained, so that less evil comes from this source in the front of such houses, as a rule; but the back gardens are commonly neglected, and the basements suffer in proportion. It is obviously important to look to the surface and subsoil drainage of the site of the house you inhabit. But this is not all. Suburban villas are not always built on natural soils at all. The brickmaker has sometimes preceded the builder in impervious soils, and the gravel and the sand merchant in pervious soils; and to bring the land to one uniform level, the well-known notice-board has appeared, inscribed, "Rubbish may be shot here," which, interpreted, means, "the seeds of disease may be sown here." The foregoing revelations of sanitary science have led me to cover the basement floor of my own and of my clients' houses with a solid and practically impervious flooring. Let me give you the prescription. Provide deal, pitch pine, oak, or other wood blocks, seven inches by three and a half inches by two inches thick, Burnettise them, and lay them in herring-bone or other patterns, bedded in gauged lime-and-hair mortar, after first dipping each block half

its thickness into hot pitch, the whole resting on a solid foundation of ground lime or cement concrete, averaging six inches thick. The interstices of the blocks to be filled in with Portland cement powder swept over them, the surface to be then washed with water, which, setting the cement in the joints, makes a permanent floor, which may be polished, or ornamented by Mr. Webb's process exhibited in the Eastbourne Exhibition.

So far we have been considering the effect, upon the health of the community, of bad drainage and water-supply, and damp subsoils. But when we have succeeded in ventilating our drains and water and subsoil out of our houses instead of into them, we have next to consider how to maintain the purity of the air of the rooms we inhabit and defile with our own breathing, our house warming and lighting, and cooking, etc. In this matter also, sanitary science has made many revelations of more or less gravity. The late Dr. Parkes has shown in great detail the various sources of impurity to which the air of enclosed spaces is subject, and the particular diseases to which such impurities give rise, under the title of "Ventilation,"—a term which he restricts "to the removal, by a stream of pure air, of the pulmonary and cutaneous exhalations of men, and of the products of the combustion of lights in ordinary dwellings; to which must be added, in hospitals, the additional effluvia which proceed from the persons and discharges of the sick. All other causes of impurity of air ought to be excluded by cleanliness, proper removal of solid and fluid excreta, and attention to the conditions of surrounding dwellings."

To expound the revelations of sanitary science by which the above impurities are detected, measured, and overcome, is my next intention; and having regard to the mixed nature of my audience, I will do so in as popular a manner as possible.

It is usual to measure the impurity in the atmosphere by the proportion of carbonic acid it contains,—not because this is the only or even the chief cause of its unhealthiness, but because the presence of carbonic acid is indicative of the proportional existence of other impurities, viz., foul organic matter and moisture, and also because the amount of carbonic acid can be accurately measured, and therefore may be usefully taken as an index of impurity generally.

The average amount of carbonic acid in the air outside of the house is four parts in 10,000 parts; when it reaches six parts in 10,000 inside, the room begins to be stuffy. Dr. De Chaumont has shown that about 3,000 cubic feet of fresh air per person per hour are necessary to preserve the air quite fresh; practically, however, no more than 750 cubic feet per person per hour is attainable in this country without producing draughts.

As Dr. Corfield observes, the air in our houses is rendered impure in various ways, but chiefly by our respiration, and by the products of combustion that are allowed to escape into it from lights and fires. Thus the air that we expire contains a certain quantity of foul or putrescent organic matter. It is charged with moisture, and contains about five per cent less oxygen, and nearly five per cent more carbonic acid, than the air we inspire. Add to this that every foot of gas consumed is equal to the addition of one person's expiration, and the need of changing the air is quite obvious. This change of air can only be effected by the admission of fresh air and the concurrent abstraction of foul air. It is not enough to provide for the extraction of air without providing for its incoming, because the effort of natural forces seeking equilibrium will cause the air to be drawn through every crevice in doors and windows, and even through solid walls and floor, creating currents of air *en route* to the motive power, viz., the partial vacuum which the fire in the grate produces. Neither is it sufficient to provide for the admission of air if there are no means of outlet; and if the chimney-flue is closed it will not enter of itself at all, but will require to be forced into the room, by which process the occupants of the apartment will feel no more delightful sensation than is experienced by a descent in the diving-bell at the Polytechnic.

In ordinary houses, the chimney is a sufficient ventilator when associated with a means of feeding the chimney with a supply of air, to prevent its feeding itself by drawing from every crevice as aforementioned. To feed the fire directly, however, would probably prevent draughts, but it would decrease the warmth and leave the room unrefreshed by the exchange of fresh for expired air. Consequently, it is obviously desirable to introduce the air in such a way that it may do all the good it can before it reaches the fire and is swallowed up by the chimney current.

Now, it has been proved by experiment that the ordinary current up the flue of a sitting-room fireplace is at the rate of from three to six cubic feet per second, or 300 cubic feet per minute, or 18,000 cubic feet per hour. Consequently, allowing 1,000 cubic feet of air per hour as necessary to be extracted for each occupant of any chamber, obviously one sitting-room fireplace flue is a sufficient extractor for eighteen persons; if 3,000 cubic feet per hour be insisted on, as recommended by Dr. De Chaumont, then six persons are efficiently provided for by this means, which is all-sufficient for practical purposes in dwelling-houses, except in the reception-rooms on party nights, when a much larger volume of expired air will be required to be extracted, to make way for the equivalent of fresh air which it is necessary to introduce to keep up the interchange and to maintain the purity of the air generally. In winter this fresh air can be warmed in its passage.

The foregoing principles underlie the best of the mechanical appliances constructed for the ventilation of dwelling-houses. And

proceeding upon these lines, Mr. Tobin has credit of reviving an old principle laid down by Mr. Whitehurst, F. R. S., and published in 1794, and of putting it into practical use most successfully at the Ophthalmic Ward of St. George's Hospital, which is a room about twenty feet square by fourteen feet high. Mr. Tobin closed all extract ventilators except the open fireplace, which it is necessary to keep going, winter and summer, and day and night, to maintain the velocity of the upward current in the chimney, which was thus retained as the only and sufficient extractor. He next provided some eight or ten semi-circular zinc shafts, about five inches or six inches in diameter, and four feet or five feet high, and fixed them at the four corners of the room, and equidistantly between them. These shafts are connected at the foot with horizontal channels leading through the thickness of the walls to the outer air, and form the fresh-air inlets,—one set of shafts being in communication with the channels leading to the outer wall gratings fixed on one side of the building, and one set of shafts communicating in a similar manner to gratings on the opposite side of the building. This was an after-thought, for when all the shafts communicated with the outer walls on one side of the building only, the room was either supplied with too little or too much air, just as the direction of the wind might happen to be towards or away from the said air inlet gratings. In this way the fresh air was introduced and the foul air extracted. No draught was felt by the patients, much less by myself and other professional visitors who congregated round the fire, expecting such a result. In fact, the prophecy of Mr. Whitehurst, delivered a hundred years before, was fulfilled, thus: "Given, an air-duct about three feet or four feet long, and five inches or six inches in diameter, fixed in either corner of the room most remote from the fire, and communicating with the external air, the incoming air will rise in a perpendicular direction to the ceiling, and being gradually diffused will soon acquire the temperature of the room. No person will be sensible of it, and the flame of a candle will not be in the least disturbed by it."

The Sanitary Engineering and Ventilating Company have done their best to improve upon this suggestion, and at the International Medical and Sanitary Exhibition at South Kensington, their various models were exhibited, showing how the blacks and dust may be intercepted in the passage of the outer air into the interior of the dwelling, and your own exhibition also furnishes examples.

The introduction of fresh air is specially provided for in a variety of stove-grates, and notably by Boyd's Hygienic School Board Stove; under the iron hearth, and through the gills at the back of the grate the fresh air passes, and is warmed in winter before it enters the room through the gratings in front of the stove, which are proportioned to the size of the room in which they are fixed for both warming and ventilating purposes.

Mr. Boyd does not consider the chimney a sufficient extractor, but always recommends extract ventilators to be used with his stoves, fixed at the foot of an air-flue built in the upper part of the wall opposite the stove, with not only a means of opening and cleansing the same, but also of heating the extract flue by a Bunsen gas-burner, as the means of rarefying the air in the shaft, and increasing the upward draught. If the objection is made that by forming extract flues you will materially increase the cost of the building by doubling the width of the chimney breasts and stacks, I answer, "No!" If you are willing to do as I did, thirty years ago, at Mr. Boyd's suggestion, instead of making the *withe* or division between the flues of solid half-brickwork, make it a hollow flue by the introduction of cast-iron flue plates the thickness of a slate, leaving a clear four inches by nine inches or fourteen inches, as the case may be, for a ventilating flue warmed on either side by the smoke-flues between which it is situated, occupying no more space than the ordinary flue-*withe*, and delivering into the open air three feet below the smoke-flues through louvred openings.

But sanitary science teaches us to regard ventilation as something more than this. It has revealed to us that ventilation cannot be rightly studied and practised without due consideration of the mode of heating and lighting intended to be adopted in the room to be ventilated. Indeed, the temperature of the air within a room and without it, being different in density, in proportion as either is hotter or colder than the other, is one cause of the pressure of one atmosphere against another in search of that equilibrium which nature is ever seeking, and never finding for any length of time together. The whistling wind rustling through the woods and forests bloweth where it listeth: we hear the sound of it, but cannot tell precisely whence it cometh or whither it goeth, until we have traced to its source the provocative cause of its movement, which will be found to arise from the variations in humidity, temperature, and consequent density and pressure of the heavier against the lighter and brighter atmospheres, with which the former impinges upon the latter. Thus the draughts in a room are the result of the pressure of the cold air in the street or passage in its struggle to get to the warm air of the room, and particularly that part of it from which the heat is generated and projected.

When two rooms are of the same temperature, the air is stagnant; that is to say, no movement of the air from one to the other will take place by the opening of a means of communication between them. It is obvious, therefore, that if the whole of the interior of a house were equally warmed without the provision of inlets for fresh and outlets for foul air, there would be no change of air from one part of the house to another. But each room might be separately lighted,

warmed, and ventilated by inlets and outlets, and yet the same temperature might be maintained, but with this difference, that there would be no stagnation, but pure fresh air, warmed as it entered for free inspiration, and withdrawn as by expiration or combustion it became impure. In the ventilation and warming of the house, the hall and staircase should not be forgotten. The best salvation from the wasteful consumption of fuel is the withdrawal of the cause of the draughtiness of rooms when the door is opened, arising from the difference in temperature between the sitting-room and the hall, by the introduction of a good hall fire or other system of warming the entrance-hall and staircase.

With reference to the lighting of rooms, of course the softest and most agreeable method is by wax candles, but the cheapness and brilliancy of gas, and its easy application has led to its general adoption, regardless of the sanitary consequences. For, as Dr. Corfield observes in his Cantor lectures, "Candles, lamps, and gas all help to render the air impure."

"It is calculated that two sperm candles, or one good oil lamp, render the air about as impure as one man's respiration does, whereas one gas-burner will consume as much oxygen and give out as much carbonic acid as five or six men, or even more. This is why it is commonly considered that gas is more injurious than lamps and candles, and so it is, when the quantities of light are not compared; but with the same quantity of light, gas renders the air of a room less impure than either lamps or candles." Common sense at once suggests that the products of combustion should be carried away, and the heat generated by the process should be utilized to expedite its removal, and several manufacturers have turned their attention to this desirable end, and at the International Medical and Sanitary Exhibition, and at your own exhibition in this town of Eastbourne, examples may be found of many means to attain this end. Strobe's sun-burners, Benham's globe light, Faraday's pendants, and many more appliances, all seek to give practical application to the principles above referred to. But we are fast arriving at the best solution of this difficulty through the agency of electricity. The sanitary side of this new lighting power is to us the most interesting. By the Lane-Fox and Swan incandescent lights, unequalled brilliancy, steadiness, and continuity of light are capable of being maintained, and this all produced within a vacuum formed within the globe of glass in which the light is produced; and consequently, by the use of these lights (which are becoming more common every day, and will soon supersede gas altogether) no heat is generated, no dirt is caused, and no products of combustion mingle with the air of the room, from which no provision needs to be made in its ventilation for this system of lighting, which, as hereinbefore explained, is so necessary in the case of other lights.

This brief review of the revelations of sanitary science would not be complete without a few words on heating.

The natural process by which the temperature of the air is raised is either by radiation or conduction. Conduction, or rather conducted heat, is the warmth given off to the air by heated surfaces brought into immediate contact therewith. Such heat in the ordinary fireplace is carried up the chimney, and the systems in use for generating it are known as hot-air stoves or flues, hot water carried in cast-iron pipes at low pressure, or in wrought-iron pipes at high pressure, and steam-pipe apparatus.

Radiated heat is like that of the sun, which passes through the air as light without heating it, into the earth or any intervening substance, from which the heat is given off gradually to the atmosphere, creating the difference between sun and shade temperature. Thus it is that the conducted heat of an open fire goes up the chimney, as I have said, and about a sixth part only is radiated into the room, passing through the air without sensibly heating it, but warming the first obstacle to its progress, such as the inclosing walls and furniture, by which the radiated heat is given off to the air of the room, raising its temperature as required. It cannot be called an economical mode of heating, being but one-sixth of the means to the end; but it is the most enjoyable and the most healthy. All the products of combustion pass up the chimney, and draw after them the impurities and denser air of the room lying lowest, while the vivifying rays of the crackling fire heat without scorching the surfaces that warm the air of the room insensibly.

The primary but not the exclusive object in the improvement of an open-fire stove must obviously be the increase of its radiating power by reflection from heated polished surfaces in close contact with the fire, and this is done by many of the best stoves, one of the latest of which is Messrs. Comyn, Ching & Co.'s new stove, called "the Paramount." In this case the fire-basket or grate is quite disconnected from the brickwork surrounding it, and equally so from the metal case, excepting at the point of contact with the bracket which sustains the circular grate. Thus the fire is enabled to radiate as from a centre all round. The rays of heat emitted from the back and sides of the fire-basket, impinging on the metal reflector of the back and sides, are reflected forward into the room and utilized, instead of being lost as before.

The secondary object, economy in fuel, is attained by the first, and by bringing in conducted heat from chambers provided at the back of the grate; and the third is the consumption of smoke. This has occupied a great deal of attention of late, with the object of purifying the air of blacks and the reduction of London fogs. An exhibition of stoves designed with this object will take place in London in October, and we shall soon see with what result.

In the meantime, the "Wonderful Grate" exhibited by Messrs. Smith & Co., at the London Sanitary Exhibition, accomplishes a great deal in this direction. It is an open fire-grate, and yet consumes its own smoke. It burns anthracite coal. It is fed with fuel in the morning, and needs no attention till night, until the fuel is consumed. It requires no stoking, yet has always a clear, bright, red fire, the radiating power of which is considerable. Then there is Dr. Siemens's grate, which is an attempt to combine gas with anthracite coal, and a host of others.

The history of the heating and ventilation of the British House of Commons, both old and new, is perhaps as instructive a lesson in this branch of sanitary science as any which could be named. Sir Christopher Wren, Captain Cook, Sir Humphrey Davy, the Marquis de Chabannes, and many others tried their hand at the old building. Dr. Reid, Mr. Gurney, and the present Dr. Percy have had their way with the new. However, it is not my intention to refer to public buildings now, but only to draw attention to the importance of the principles laid down by sanitary science which are applicable to all householders, and the revelations of which I have now traced as they have influenced house-drainage and the ventilation of the same, house warming and lighting, and the ventilation of the rooms in which we live and move and have our being.

If I have made no new revelations, I have at least endeavored to popularize the old, and I think we may look forward with confidence, as the result of such exhibitions as that which you have inaugurated in this town, that their need will become less and less as time advances, knowledge increases, and the evidence of the value of these revelations accumulates. It is a work of "sweetness and light." It aims to realize that which hitherto has existed more in the imagination of the poet than in fact, —

"Home, sweet home."

THE CRACKING OF PLATE-GLASS.

NEW YORK, September 12, 1881.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — Perhaps the following may explain the cause of glass fracturing by black paint: a sheet of glass has black lettering on it; light and heat is readily transmitted through the clear glass, but the black paint absorbs all the light and heat, thus making the glass under the paint to expand much more than the clear glass, which unequal expansion is the cause of the glass fracturing. I know of no other reason why glass should crack under such circumstances.

Yours respectfully,

AUG. T. PREYER.

NOTES AND CLIPPINGS.

THE CATHEDRAL OF ULM. — In the Cathedral of Ulm a fresco covering an entire wall has been discovered. It is a representation of the Last Judgment.

GUATEMALAN SCULPTURES. — The long-expected sculptures from Guatemala have at last reached Berlin and been placed in the Royal Museum. The work connected with their removal has extended over a period of five years, having been interrupted by the death of Dr. Berendt, the authority on the archaeology of Central America with whom Professor Bastian had associated himself in the enterprise, and whose death was caused by the unhealthy climate in which his labors had placed him. — *New York Tribune*.

DISASTERS IN SWITZERLAND. — Switzerland appears to be anything but a safe place to live in or travel through this year, for accidents of varied forms are constantly reported. Thus, a new lake of considerable size was unceremoniously formed recently by a huge mass of rock and earth, which fell from a mountain-side at Sonvix, in the Grisons, blocking up the course of a small stream which flowed past the village into the Rhine, and converting the valley into a lake. The little village of Surein, hard by, was put in jeopardy by the rising water. A similar fall of stone nearly destroyed the village of Reichenbach, in the Bernese Oberland, September 9, while three days later a landslip destroyed thirty houses in the village of Elm, Canton Glarus, and killed some two hundred persons.

A STATUE OF MARCO POLO. — A life-size statue of Marco Polo, which was discovered in Canton, has reached Venice. It is of wood and gilt. The great Venetian is seated in a red armchair, with a porcelain vase at his feet to receive perfumes, wears a Chinese costume, with the exception of a European cloak and hat. His moustache and beard are painted dark blue. Polo, according to the *Musée Artistique et Littéraire*, is regarded in China as one of the tutelary geniuses of the country. Hence the statue and the perfume receiver. We presume the committee having charge of the erection of the long-contemplated statue at Venice to the famous voyager will still continue its labors.

AN INJUNCTION AGAINST A DAM. — The Springfield *Republican* says that Mrs. Julia Ward Howe's suit against George H. Norman, of Boston, has begun at Newport. She asks the court to restrain the defendant from using a dam which he has built on the sources of a valuable stream flowing through Lawton's valley, where she has real estate. She claims that the dam curtails the water-supply on her estate. The dam was built with a view of supplying Newport with water in case of accident to the reservoir in the adjoining town of Middletown. He bought a large tract of land in Portsmouth and built the dam complained of at great expense. Mrs. Howe a few months ago secured a temporary injunction, and she now hopes to make it permanent. The case attracts a good deal of attention.

DRAINING THE ZUYDER ZEE.—A very entertaining writer, Edmondo de Amicis, states that nothing gives a higher idea of men's power than the great system of defenses which is to be seen at every point. The drying up of the Haarlem Lake was in itself one of those gigantic jobs which was regarded at one time as impossible. But this work sinks into comparative insignificance alongside the projected draining of the arm of the sea known as the Zuyder Zee. The plans of the work have been laid before the Government, and operations will, it is said, soon be begun. The extent of ground is 200,000 hectares, or nearly 500,000 English acres. The works will be begun simultaneously at four points, and from eight to ten years will be required for their completion. The cost is estimated at \$46,000,000 (230,000,000 francs). This stupendous sum alone places this enterprise as one of the greatest engineering projects. A dike of 41 kilometres in length will be built from the point of Enkhuisen to the coast of Over-Yssel. The crest of the dike will be five metres above the low-water mark at Amsterdam, or some two metres above the highest tides. The dike will be of sand and clay, and protected at bottom by a system of osier works or fascines. The breadth will be everywhere sufficient to resist high seas. The cost per current yard will be about \$250. The inside berme will be used as a tow-path, and finally a railway track will be laid on it. In addition to the dike large docks will be constructed, and some ten large canals, with numerous locks, so that there will be no interruption to navigation. Each hectare thus drained will be worth \$290. Thousands of soundings have been taken, which have shown that the bottom contains superior soil to that of Haarlem, which sells at \$400 per hectare (2.4 acres). The first idea of draining the Zuyder Zee only dates from 1865. The engineering studies were only begun, however, in 1875. Owing to the enormous cost the State has undertaken a work which it was thought beyond the power of private enterprise. — *Engineering News*.

HUNTING IN GREENWOOD CEMETERY.—Greenwood Cemetery embraces five hundred acres, and is traversed by twenty miles of drives. It is well named the City of the Dead, for it is already the final resting-place of more people than New York had when the cemetery was started forty years ago, or nearly 300,000 persons. It is also a haunt of the living, many of this portion of its inhabitants causing no little trouble to the official trapper. More than 20,000 animals, large and small, have been shot or trapped within the cemetery bounds since 1876. The largest game was a fox, trapped in 1878, and the smallest moles and ground mice. The official figures for five years (1876-1880) are as follows: Ground mice, 14,096; chipmunks, 2,853; moles, 2,390; snakes, 366; rats, 208; cats, 395; dogs, 137; skunks, 10; muskrats, 9; fox, 1; total, 20,465. All this work has been done by one man, who is expressly engaged for this purpose. His name is Fritz Wagner, but he is more familiarly known to the 250 men employed in the cemetery as the "Mole Catcher." — *Scientific American*.

THE SPANISH SHIP CANAL.—The prospects for building a ship canal in Spain from the Bay of Biscay to the Mediterranean through the valley of the Garonne and Aude are somewhat favorable. State engineers originally estimated the cost of it at 1,500,000,000 francs, but others who have made a survey say the canal can be dug for less than half that—some 700,000,000 francs. The Conseil Général of Aude has adopted a motion in favor of the work.

A NEW GUTTER-CROSSING.—The *Moniteur Industriel* describes a new covering for gutters or leaders crossing sidewalks. Heretofore these covers were plates of cast-iron, the surface of which was broken by elevated ridges. Much travel, however, wore these plates quite smooth and polished, making them dangerous to tread upon. The government of the city of Paris is now laying new covers, which are cast with a ridge around the edges, forming a basin, which is filled with bitumen or asphalt flush with the sidewalk; this leaves but two narrow ridges of metal exposed, which give no trouble. Throughout the Rue Richelieu these covers have been placed, and the city is introducing them in the Rue Montmartre.

THE "CAPTURE OF BOU AMENA BY THE FRENCH."—A story is to be found in old jest books of an Irish artist who painted "The Passage of the Red Sea" by covering his canvas with red paint, and he explained his interpretation of the scene by saying that the Egyptians were supposed to be drowned, while the Israelites had escaped. According to the *Moniteur des Arts*, no less an artist than M. de Neuville has produced a corresponding whimsicality. A canvas which measures four metres by two metres, and represents nothing but a vast expanse of sand, has been entitled by the painter "The Capture of Bou Amena by the French." When De Neuville was asked by a puzzled visitor to the studio to point out where Bou Amena was, the painter gravely replied that the chief had fled, and, as regards the French troops, they had not arrived at the time when the scene was depicted. The picture is a sarcasm, and will no doubt be appreciated in Paris. — *The Architect*.

KENTUCKY'S BIGGEST TREE FELLED.—A gigantic tree has been chopped down near Carr's, Ky., that was probably the oldest and the largest in Kentucky. It measures 18 feet in diameter at the root base. The cut was made 6 feet above the ground, where its diameter was at least 12 feet, and its circumference 36 or 37 feet. From the cut to the first limb can be made eight good length rail-cuts, each 10 feet long, which would split enough rails to fence a small farm. The first limb was nearly a half-dozen feet in diameter, and it would have, by itself, made a very large saw-log. Nearly all the small limbs had fallen and decayed away. Its plank measurement is computed at nearly 50,000 feet, besides several limbs that would make, altogether, 25 cords of wood. On the day of the felling a large concourse of people marched from Vanceburg to the place. Col. W. S. Rand, an able speaker, was the orator of the day. He and others, qualified to be good judges of such things, supposed that this mighty forester was four or five centuries old. There were to be distinctly seen over 300 rings, and it is not known how long since it completed its growth, as it has been dead for many years. — *Correspondence of the Louisville Commercial*.

HISTORIC HOUSES IN HOLBORN.—There must be no shedding of false sentiment over the demolition of the house in High Holborn in which temporarily sojourned the noble musician Franz Joseph Haydn. It seems certain that he wrote his six symphonies here for the Hanover Square Concerts, and he may have noted down his first ideas of the "Creation" in his Holborn lodgings; but it was at his villa in the suburbs of Vienna that he completed his immortal work. For the rest, though historic houses are plentiful in Holborn, the fact cannot be allowed to interfere with the clearing of new sites. Indeed, that lengthy thoroughfare has been undergoing a chronic course of demolition and reconstruction for more than a hundred years. Within the memory of not very elderly persons the Holborn Valley has been entirely laid out anew, and bridged by one of the finest viaducts in the world; Holborn Bars and the unseemly Middle Row have been swept away; the Inns of Courts' Hotel has been built, the southern extremity of Gray's Inn Lane widened, and the towering new premises of an insurance office erected eastward of "the Lane." Nor must it be forgotten that the predecessor of the plain structure called Furnival's Inn, between Brooke Street and Leather Lane, was an ancient mansion which, once the town house of the Lords Furnival, became an Inn of Chancery, and as such was rebuilt in the reign of Charles I. There was a magnificent façade toward Holborn designed by Inigo Jones; but this at the beginning of the present century had become desperately ruinous, the Legal Society of Furnival's Inn was disestablished, and Mr. Peto, the contractor, obtaining a lease of the premises, pulled down the façade without and the fine Gothic hall within, and built the present quadrangle, surrounded on three sides by chambers, with a commodious hotel on the fourth. Ere long another obsolete Inn of Chancery, Barnard's Inn, on the south side of Holborn, will probably be pulled down and its area leased in eligible building lots; nor, perhaps, in a few years' time, will the fine old Tudor gables of Staple Inn preserve that venerable legal hostelry from destruction. Only very recently a most picturesque block of sixteenth-century houses in Gray's Inn Lane was demolished for the building of the Holborn Town-Hall. Sentimentalists may sigh, but this continuous sweeping away of the structures of the past—when they interfere with the comfort or convenience of the present—is a matter of absolute necessity. Holborn, although it contained in the middle ages some very stately mansions, the property of the nobility or of the prelacy, was, until a comparatively modern period, one of the most disparaged and least cared for of our main thoroughfares. It had long possessed unenviable notoriety as the high road to Tyburn, and few people chose to build comely houses or open handsome shops along the "Via Dolorosa," which began at St. Sepulchre's, by Newgate, and ended at St. Giles's Pound, and was traversed on most Monday mornings in the year by the cart with the doomed wretch in it sitting on his coffin. The ancient Malefactor's Way is now rapidly becoming one of the handsomest streets in Europe, and the stateliness of its edifices should be considerably enhanced by the First Avenue Hotel. — *London Daily Telegraph*.

THE ARAB MONUMENTS OF EGYPT.—The rule of the present dynasty in Egypt may be regarded as the catastrophe so far as Arab art is concerned. Into the social and political state of the country at the time of the accession of Mohammed Ali it would be out of place in this brief essay to enter at any length. The power exercised by the Memlooks had doubtless reached an excess which became unbearable, and afforded a plea for carrying into execution projects of reform and a system of government having within it certain elements of justice which found favor in Europe at the time, although the means adopted to carry out these changes could not be palliated. The preservation by means of endowments of the mosques and the schools attached to them, had hitherto sufficed to arrest their decay, but by a process not altogether unknown in Europe these resources had been diverted from the intention of their founders, and devoted to other purposes. The advancement of education upon a European basis became the watchword of the party of progress, and the astute ruler of Egypt knew well how to avail himself of the sounding cry which he shaped to his own ends, regardless of the traditions and prejudices of his adopted country. Hungry adventurers followed in the wake, and profited by the disruption which secured for them advancement and emolument, and it is hardly a matter for wonder if the interests of native art were made to suffer. A project which should aim at the preservation of the Arab monuments of Egypt ought especially to recommend itself to the attention of all who take an interest in Oriental art, and that this interest is widespread and on the increase none can doubt who regard the objects displayed in our museums and private collections, the subjects selected by the painters of the day, and the influence it has exerted upon decorative art both in this country and on the Continent of Europe. — *The Nineteenth Century*.

THE BOWER-BARFF PROCESS OF PRESERVING IRON.—After some years of unprofitable competition between Messrs. Barff and Bower, they have concluded to join forces in introducing the Bower-Barff process. The processes invented respectively by Mr. Bower and Professor Barff for protecting iron and steel from oxidation are so well known to our readers that they require no description here, further than to say that the Bower process consists in utilizing highly heated air, and the Barff superheated steam, for effecting the object in view. The processes differ only in the means by which the protecting coating is formed, the result in each case being the same—a film of magnetic oxide which is unaffected by climatic conditions. The sole expense of applying the processes is the heating of the articles in a specially constructed furnace, and subjecting them to the action of ordinary atmospheric air and carbonic acid gas or steam, at a suitable temperature, when the surfaces of the iron or steel combine with oxygen and form a coating of magnetic oxide. The color of the coating varies from a beautiful French gray to almost black, and if these be not sufficiently ornamental, gold and other metals can be applied directly upon the magnetic oxide. Should it be necessary for decorative purposes to paint the articles, the paint will adhere the same as on wood or stone — *Iron Age*.

BUILDING INTELLIGENCE.

(Reported for The American Architect and Building News.)

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

BUILDING PATENTS.

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

246,862. SAFETY ATTACHMENT FOR ELEVATORS. — Ephraim B. Bishop, San Francisco, Cal.
246,865. BRIDLE FOR BRUSHES. — Edwin S. Chandler, Bennington Centre, Vt.
246,871. FIRE-ESCAPE. — Alphonse T. Cwerdinski, St. Louis, Mo.
246,876. SASH-FASTENER. — Charles L. L. Emery, Biddeford, Me.
246,881. COMMODORE. — Duncan C. Hartman, Baltimore, Md.
246,885. REAMER. — Joseph H. Huber, Lancaster, Erie, Pa.
246,889. COMPOSITION FOR FILLING THE PORES OF WOOD. — Christopher H. Kuhn, Cincinnati, O.
246,894, 246,895, 246,896, 246,897, 246,898, 246,899. FIRE-EXTINGUISHER. — Charles M. Marlin, New York, N. Y.
246,903. METAL-TURNING LATHE. — Thos. G. Morse, Pa.
246,904. BIT-STOCK. — Obed Peck, Rowe, Mass.
246,914. AUTOMATIC ELEVATOR-GATE. — Thomas Scholey, Peoria, Ill.
246,936. SASH-HOLDER. — Gustavus H. Barb, Denton, Tex.
246,938. ROCK-DRILLING MACHINE. — Milan C. Bullock, Chicago, Ill.
246,969. SAFETY DEVICE FOR ELEVATORS. — John H. McCarren, Cincinnati, O.
246,973. WASTE-PIPE COVER FOR SINKS. — Johannes Persson, New York, N. Y.
246,976. PIPE-WRENCH. — John F. Phillips, Georgetown, Col.
246,980. SAW-SET. — Edward Senn, New York, N. Y.
246,982. DOOR-SPRING. — Fred. W. Smith, Freeport, Ill.
246,995. PARLOR AND OTHER HEATING STOVES. — Edgar W. Anthony, Boston, Mass.
246,997. BRICK-KILN. — Daniel Ashbury and E. Nye Hutchinson, Charlotte, N. C.
247,027. SASH-CORD FASTENER. — Thos. P. Dunne and Paul Rath, New York, N. Y.
247,031. DRIER FOR PAINTS. — Alexander H. Everett, San Francisco, Cal.
247,040. HOT-WATER GENERATOR. — William W. Goodwin, Philadelphia, Pa.
247,044. STONE DRILL OR REAMER. — John Greek, Evansville, Ind.
247,050. HANGER FOR SUSPENDING BEAMS. — Lemuel M. Ham, Boston, Mass.
247,062. AUGER-HANDLE. — William A. Ives, New Haven, Conn.
247,106. REMOVABLE WOODEN THREAD FOR STONE STEPS. — Henry T. Pratt, New York, N. Y.
247,130. DOOR-KNOB. — Benjamin D. Stevens, Cambridge, Mass.
247,133. HYDRAULIC ELEVATOR AND HOIST. — Fernando Tommasi and Emile Heurtebise, Paris, France.

SUMMARY OF THE WEEK.

Baltimore.

BUILDING PERMITS. — Since the last report twenty-one permits have been granted, of which the following are the more important: —
Solomon McCabe, 3 brick dwells., Wall St., between West and Ostend Sts.
J. B. Irvine, 8 three-sty houses, Carey St., near Mulberry St.
J. B. Irvine, 3 brick dwells., Mount St., south of Edmonson Ave.
Baltimore Chrome Works, brick building, 50' x 200', cor. of Dock and Wills Sts.
J. G. Mann, three-sty brick building, Dallas St., between Aliceanna and Lancaster Sts.
Geo. C. Hershman, 7 brick dwells., Essex St., between Gist St. and Canton Ave.
S. T. Cromwell, 2 brick dwells., Wayne St., near Warner St.
Edmund Dedier, 4 brick buildings, Watson St., between Exeter and Lloyd Sts.
Frank Ellerman, 2 brick buildings, Castle St., between Monument and Madison Sts.
E. W. Haverland, 11 brick dwells., Preestman St., commencing at s w cor. of Preestman and Stricker Sts.

Boston.

BUILDING PERMITS. — *Brick.* — Court St., cor. Court Sq., for Fifty Associates, hotel, 43' 6" x 100', seven-sty flat; J. W. Coburn & Co., builders.
Wood. — Monument St., near Medford St., for William D. Haley, 6 dwells., 20' 6" x 27', three-sty; Wm. H. Haley, builder.
Haye Park Ave., rear of, cor. Canterbury St., for D. Bianchetti, storage, 20' x 30'; W. R. Walker, builder.
Elm St., Orient Heights, for Enrich P. Botter, dwell., 18' x 25'; James H. Coffin, builder.
Clarence Pl., near Washington St., for Samuel Williams, stable, 24' x 30', two-sty; Joshua H. Wilder, builder.
North Beacon St., near Lyman Ave., for James Shaughnessey, 2 dwells., 16' 5" x 27'; Daniel M. O'Connell, builder.

AN EXHIBITION
— OF —
Architectural Drawings

— WILL BE HELD —
IN CONNECTION WITH THE FAIR
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Massachusetts Charitable Mechanic Association,
IN BOSTON,

During September and October, 1881.

ARCHITECTS IN EVERY PART OF THE COUNTRY

Are invited to contribute Designs to this Exhibition, and to forward their Contributions as soon as possible.

Drawings may be sent by mail, by express, prepaid, or by freight at reduced rates arranged by the officers of the association, to T. M. CLARK, 178 Devonshire Street; HENRY A. TURNER, 31 West Street; JOHN S. DAMRELL, City-Hall, or to the *American Architect*, 211 Tremont Street, Boston, Mass.

BUILDING INTELLIGENCE.

Brooklyn.

BUILDING PERMITS. — *Fifth St.*, s s, 122' 10" e Fifth Ave., 32 three-sty brick and brownstone dwells.; cost, each, \$5,000; owner, C. B. Sheldon, 401 Wyckoff St.; architect, N. G. Foster; builder, Chas. Long.
Vernon Ave., s s, 350 e Nostrand Ave., 3 two-sty frame dwells.; cost, each, \$4,200; owner and builder, Thos. E. Greenland, 256 Kosciuszko St.; architect, I. D. Reynolds.
Central Ave., n w cor. Myrtle St., 2 three-sty frame tenements; cost, \$9,000; owner, Peter Grimm, Central Ave.; architect, Geo. Hillenbrand; builders, Wm. Bayer and Schey.
Wither St., No. 85, n s, 100 w Leonard St., four-sty frame tenement; cost, \$6,000; owner, Henry Bechtluft, Dover St., cor. Pearl St., New York; architect, Geo. Hillenbrand; builders, Wm. Bayer and J. Rueger.
Eighteenth St., No. 120, s s, 100 e Third Ave., two-sty brick dwell.; cost, \$2,200; owner, E. F. T. Stendner, 645 Third Ave.; architect, George W. Brandt; builders, Firth & Van Pelt and George W. Brandt.
Clinton Ave., e s, 46 s Fulton St., five-sty brick flat; cost, \$14,000; owner, Thomas A. Wellwood; builder, J. Pearce.
Bremen St., e s, south of Prospect St., 6 three-sty brick dwells.; cost, \$3,500 each; owner, C. Ritchie, 16 Court St.; architect, E. T. Hatch.

Buffalo.

DWELLING. — Brick dwell., for Mr. Magnus Weiner, North St., nr. the "Circle"; cost, \$23,000; architects, Holmes & Little.
STABLE for Mr. Daniel O'Day, a brick stable on North St., near Delaware Ave.; cost, \$10,000; architects, Holmes & Little.

Chicago.

BUILDING PERMITS. — C. Carpenter, 2 three-sty brick stores and dwells., 40' x 70', Madison St., near Paulina St.; cost, \$14,000.
W. B. Walker, two-sty brick dwell., 42' x 70', 2025 Prairie Ave.; cost, \$30,000.
S. F. Norton, 2 one-sty brick dwells., 20' x 34', Coblenz St.; near Western Ave.; cost, \$2,400.
J. Schuster, three-sty brick store and dwell., 24' x 65', 733 Larrabee St.; cost, \$8,000.
C. Miller, three-sty brick dwell., 27' x 180', 2819 Michigan Ave.; cost, \$10,000.
H. M. Taylor, 2 one-sty brick dwells., 22' x 32', Coblenz St., near Western Ave.; cost, \$2,400.
C. C. Marshall, three-sty brick factory, 40' x 150', 44 Desplaines St.; cost, \$20,000.
C. Buck, one-sty brick dwell., 22' x 49', 439 Centre Ave.; cost, \$2,500.
City, two-sty brick engine-house, 24' x 104', Ogden Ave.; cost, \$10,500.
Murphy, Anthony & Co., one-sty addition to boiler-shop, 20' x 100', Fulton St.; cost, \$2,000.
L. O. Goddard, two-sty brick dwells., 34' x 47', Lake Ave., near Thirty-sixth St.; cost, \$8,000.
F. Smutech, two-sty brick dwell., 21' x 54', 36 McHenry St.; cost, \$2,600.
J. M. Brunsvick & Balke Co., five-sty brick factory, 100' x 200', Market and Superior Sts.; cost, \$50,000.
S. Chase, two-sty brick dwell., 21' x 52', 394 Sophia St.; cost, \$4,000.
W. St. L. & P. R. R. Co., additional sty, 24' x 60', Twelfth St. and Third Ave.; cost, \$2,500.
R. Stevenson, three-sty brick dwell., 25' x 56', La Salle Ave. and Schiller St.; cost, \$13,000.
G. H. Taylor, six-sty brick building, 90' x 189', 140 Monroe St.; cost, \$125,000.
C. L. Hutchinson, three-sty dwell., 30' x 60', 2709 Prairie Ave.; cost, 15,000.

BUILDING INTELLIGENCE.

H. Shell, two-sty brick dwell., 24' x 56', 2638 Wentworth Ave.; cost, \$2,500.
McFarren, Levy & Co., one-sty brick factory, 19' x 80', Indiana St. and La Salle Ave.; cost, \$3,500.
C. Kadowsky, two-sty brick dwell., 20' x 54', Dickson St.; cost, \$3,000.
J. Seyk, two-sty brick dwell., 25' x 56', 135 Nineteenth St.; cost, \$4,600.
C. Gottschalk, four-sty brick malt-house, 59 Division St.; cost, \$12,000.
F. Lampke, two-sty brick dwell., 21' x 56', 170 Dayton St.; cost, \$3,800.

Denver, Col.

BUILDING PERMITS issued since our last report: —
C. R. Gallup, two-sty brick dwell., 23' x 74', Champa St.; cost, \$3,700; E. F. Fassett, architect.
D. O. Perrott, two-sty brick dwell., 44' x 45', Tremont St.; cost, \$4,600.
J. M. Stickler, two-sty brick dwell., 32' x 57', Eleventh St.; cost, \$5,100; E. Anthony, architect.
P. W. Barnes, 5 one-sty brick dwells., each 20' x 25', Olive St.; cost, \$4,000.
Gen'l Albert Johnson, two-sty brick dwell., 50' x 50', Sherman St.; cost, \$7,000.
E. O. Wolcott, two-sty stone dwell.; cost, about \$14,000; F. E. Edbrooke, architect.
Jacob Schueler, three-sty brick block, 25' x 75', Larimer St.; cost, \$16,000.
E. K. Smith, two-sty brick dwell., 32' x 53', Arapahoe St.; cost, \$5,500.
Smith & Pinkham, brick stable, 50' x 125', Lawrence St.; cost, \$8,000.
Mrs. Louisa Clough, two-sty brick dwell., 32' x 48', Curtis St., between Twenty-eight, and Twenty-ninth Sts.; cost, \$4,500.
Adam Weber, two-sty brick business house, 22' x 66', Holladay St., between Eleventh and Twelfth Sts.; cost, \$4,000.
Bishop, P. Machebeuf, three-sty brick dwell., 36' x 44', Stout St., between Fifteenth and Sixteenth Sts.; cost, \$9,000.
B. H. Baylis, two double brick dwells., two-sty each, 42' x 62', South Fifteenth St., between Capital and Olive Sts.; cost, \$15,000.
Charles Wheeler and Thomas Withers, two-sty double brick dwell., 42' x 57', Champa St., between Eighteenth and Nineteenth Sts.; cost, \$8,000.
BREWERY. — Philip Zang & Co., three-sty brick brewery, 91' x 155', Seventh and Water Sts.; cost, \$50,000; F. C. Eberly, architect.
HOSE-HOUSE. — Denver Fire Department, two-sty brick hose-house, 25' x 75', Broadway; cost, \$10,950; Mr. Cutschaw, architect.
CITY-HALL. — New city-hall, four-sty brick building, 100' x 250', stone basement and trimmings; cost, \$143,700; Nichols & Gausmann, architects; McPhee & McGinnity, general contractors.

New York.

BUILDING PERMITS. — *Fifty-eighth St.*, Nos. 111, 113, 115 and 119 E., three-sty brick and stone club-house; cost, \$100,000; owner, German Liederkrantz, W. Steinway, president, East Fourteenth St.; architects, Wm. Kuhles and H. J. Schwarzman.
One Hundred and Sixty-fifth St., n s, 8' 4" e Grove Ave., 4 three-sty brick dwells.; cost, each, \$3,000; architect, F. T. Camp; builders, A. B. Alexander and N. Hand & Son.
Broome St., n s, 22 e Elm St., seven-sty brick factory; cost, \$75,000; owner, William C. Browning, 552 Fifth Ave.; architect, J. Hoffman; builder, Richard Deeves.
Church St., Nos. 212 and 214, five-sty brick store and lofts; cost, \$25,000; owner, Jacob Gottgen, 30 Walker St.; architect, J. Hoffman.

(Continued on next page.)