

ANCIENT CONSTRUCTION.

Explorations at Nineveh have shown that, except for paving purposes, stone rarely entered into the construction of the walls and buildings. They consisted of clay only, which had evidently been moulded in the shape of bricks, and put together without the aid of mortar or cement of any kind. In the few examples in which stone was found to be employed the joints were made in the same manner, that is, by simple juxtaposition. Mortar and cement appear to have been rarely or never employed. The size of the stones was considerable, so that mere weight would, to some extent, render superfluous the employment of any adhesive substance at the joints. But this was not the case with the bricks, which were nearly of a square form, 1 foot 4 inches on the sides by 2 inches in thickness. The question which remains unsettled is: In what degree of consistency were these bricks at the time they were put together? Were they sufficiently plastic to adhere together, or were they wetted before being used, so as to soften the mere surfaces which were in contact? Upon this supposition there would be an appreciable difference between the appearance of the body of the bricks and that of the joints, which does not exist. There is, nevertheless, a slight difference in color at those points, which looks like lines. The Assyrians had two varieties of baked bricks; the one was regularly shaped, with parallel faces, and the other of a prapezoidal form. These latter were intended for arches or vaults, and the inclination of the sides varied with the position which the particular brick was intended to occupy in the curve. The dimensions and proportions of the Assyrian brick differ from those of modern manufacture. Those employed in paving were of two sizes. One class was 1 foot 4 inches by 1 foot 4 inches by 2½ inches in thickness, and the other 13 inches by 13 inches by 4½ inches thick. A peculiar feature in these old bricks is that they are, with few exceptions, covered with inscriptions in the cuneiform character. Two remarkable features in the construction of ancient cities were, first, that either the diagonals or the direction of the sides pointed exactly towards the cardinal points, and, secondly, the enormous thickness of the walls of the principal buildings. It is probable that astronomical reasons dictated the former of these, and climatic exigencies the latter. In the case of Nineveh, there can be little doubt of this, as the Assyrians were celebrated for their skill in astronomy, and their partiality for the science. The thickness of the internal walls is scarcely ever less than 10 feet, and that of some of the external varies from 16 feet to 25 feet. Some consideration must be given to the fact, with regard to thickness of the walls, that the mode of building them with bricks merely dried in the sun required this dimension to be disproportionately great.

In the building of their domes and vaults the Assyrians employed a more brittle description of brick than in their walls and pavements, and the joints were made by grouting them with semi-fluid clay. The *voussoir* shape of these bricks prove that the theory of the arch must have been known at that time, and some considerable progress made in the preparation of artificial stones. There is no evidence of timber being employed as a material of construction by the people under notice. It was used only in small quantities, and for the purposes of ornament. It seems that iron was altogether unknown as a constructive material. Copper was turned to account for the pivots or hinges of doors, and lead was also rendered serviceable. Enamelled bricks were common, and stucco was largely employed, as with us, for the double purpose of protecting the brickwork from the effects of the air, and hiding the roughness of the surface. There is one ceremony which appears to have existed at the time of the Assyrians, which is common to modern times as well. It is that of laying the first, or foundation, stone of a building. A recent French explorer, M. P. Place, discovered in a layer of fine sand underneath one of the mounds of the gates of Nineveh, a variety of different objects in marble, agate, and cornelian, which were cut and engraved, and were, moreover, all pierced with a hole, as if they had originally formed part of a bracelet or necklace deposited at the laying of the corner stone as coins are deposited with us. While well versed in the practice of earthwork, brickwork, and even masonry, the Assyrians were totally ignorant of the art of construction considered in the light of an assemblage of pieces of timber or iron. They could heap up materials so as to cause the structure so composed to resist any outward force by its sheer weight or inertia, but they knew nothing whatever of the distribution of pressures, or how to proportion a structure so that it should be equally strong in all parts. Both the labor and the material were too abundant to call for economy in either one or the other.—*The Engineer*.

PERILS OF BALLOONING.

Frank K. King is reported to have made a balloon ascension from Morristown, Vermont, on the 4th of July. When he had risen to the height of nearly three miles he encountered a snow storm, which so loaded the top of the balloon that it was driven down, and he landed in a deep forest some eight miles distant. It took a searching party, of 300 strong, forty-eight hours to find him. He was discovered in a famishing and exhausted condition, but had sustained no other injury.

FRENCH TELEGRAPHY AT THE EXPOSITION.

A correspondent of the New York *Evening Mail* writes to the paper from Vienna as follows:—

"I am sorry we are not represented in telegraphic apparatus, as we have several things in America that would be worth seeing. The French telegraphic department is the best in the exhibition, and some of the inventions are exceedingly interesting. There is a machine that prints an autographic despatch, not chemically like the other autographic instruments, but on white paper with printers' ink. It cannot be described in writing, and so I will not attempt to say how it is made, except that there is synchronous action of two rollers; one may be in New York and the other in San Francisco, or in any two other places connected by a telegraph wire. A written message, a draft, a sheet of music, the portrait of a burglar, anything that can be drawn with a pen—not with a pencil—may be telegraphed from one end of the world to the other, and reproduced with printers' ink on white paper, like that whereupon the patron of the *Mail* reads this letter.

"Then they have a machine by which four operators can work over a single wire at once in one direction, just as one operator does with us; and by putting on four operators the other way, you can make the capacity of one wire equal to that of eight by the old system. We are now using in America a system by which a wire may be operated both ways simultaneously. The French machine is exactly four times ahead of us. They have, also, an electro-magnet that works over a hundred miles of wire.

It is evident that this correspondent is not fully posted in regard to the state of telegraphy in his own country.

The instrument first above described is the "autograph telegraph" of E. Lenoir of Paris. It is a modification of the Bakewell and Casselli instruments, invented years ago. The message to be transmitted is written on a prepared slip which is placed on a roller and turned, under a transmitting stylus. Every line in the original message produces a corresponding dot in ink on the paper at the other end of the wire. By turning the roller often enough and so repeating the transmission, the letters are dotted out at the receiving office. In an example now before us, done on the instrument described by the correspondent of the *Evening Mail*, each letter is composed of a number of dots and dashes, each representing a telegraphic signal. In making the capital letter B, for example, some forty-two signals were employed. It is almost needless to say that instruments that involve the making of so many signals to form a single letter cannot compete in rapidity with the simple system of Morse, or the various printing instruments in common use here. The Lenoir machine is more of an electrical curiosity than a business machine.

In respect to the other instruments, by which it is alleged that eight operators can work at once on one wire, this is the invention of R. Meyer, and its capacity is greatly overrated. Mr. George B. Prescott, electrician of the Western Union Telegraph Company, during a recent visit to the continent, made an examination of this Meyer instrument. The capacity claimed for it by the inventor was only one hundred messages of ten words each per hour, which is slow work for eight operators.

The double system, referred to by the correspondent as in use here, in the Stearns duplex instrument, by which two operators may work in contrary directions over one wire. One hundred and forty-six messages have been sent per hour over a single wire by this system, using the Morse key. The American system is therefore about fifty per cent faster, although employing only two operators, than the Meyer French plan with eight operators.

The Stearns duplex system is only limited in its rate of transmission by the skill of the operators. The fastest operator has been able to reach a rate of 2,500 words per hour. Two operators having this ability would be able, by means of the Stearns instrument, to send over one wire 5,000 words per hour, or 2,500 words each way. A rate even higher than this has been experimentally obtained.

The above French telegraph instruments are not indicative of an advance or improvement over the devices in common use here. Simplicity in the instrumentation is the aim of the American telegrapher for ordinary work. Give him a Morse key and a sounder, and he is ready for instant work anywhere, from the lonely summit of Mount Washington to the crowded Babel of the stock exchange.

The observations of Mr. Prescott were that the French official consumes more time in preparing to transmit a message than is taken here to send a telegram across the continent.—*Scientific American*

EVERY MAN HIS OWN JUDGE.—I have my own laws and judicature to judge of myself, and apply myself more to these than to any other rules. I do indeed restrain my actions according to others; but judge them not by any other rule but my own. You yourself only know if you are cowardly and cruel, or loyal and devout. Others see you not, and only guess at you by uncertain conjectures. They do not so much see your mind as your art; rely not, therefore, upon their opinions, but stick to your own.—MONTAIGNE.

THE AMERICAN PAPER TRADE.

During the year 1872 there were in operation in the United States 812 paper mills, owned by 705 firms, and of an estimated value of over \$35,000,000. In addition to this actual value of mill property, there is to be added the usual working capital, twenty-two and a half per cent of the value of the mills, thus making the total capital invested in paper making throughout the country \$43,500,000. The mills employ 13,426 male, and 7,700 female hands, besides 922 children, or a total of 22,042 laborers, whose wages amount yearly to the large sum of nearly \$10,000,000. Their product amounted last year to 317,387 tons, valued at \$66,475,825. The total number of engines running is 3,203, besides 299 Fourdrinier, and 689 cylinder machines.—*Paper Trade Journal*.

THE WORK OF A CIRCULAR SAW.

Ninety thousand feet of lumber were recently sawn at the mill of John McEwan, Bay City, Mich., in 34½ hours, besides slabbing for a gang, with two sets of cutting teeth, 36 in each set, without sharpening in any way, each tooth cutting more than 1,200 feet of lumber. The saw never made an imperfect run, and the lumber was sawn much smoother than by any other method. The saw in question is five and a half feet in diameter and No. 7 gage. This, in all probability, is the greatest feat ever performed with a saw with the same number of cutting points without sharpening in any way, so says the *Lumberman's Gazette*. This saw is provided with J. E. Emerson's improved bits or teeth. Their points are alleged to be tempered so hard that they will cut glass; and they weigh less than one sixth of an ounce. The saw is a novelty in its way, very simple in construction, the bits being changed in about five to eight minutes and never working loose. The saw cuts six inches to each revolution, dropping from six to eight boards per minute. Manufactured by Emerson, Ford & Co., of Beaver Falls, Pa.

"CATCHING ON BEHIND."

"Catching on behind" is the crowning enjoyment now for boys. Johnny comes home at night surfeited with fun; he has had a good time, but he is tired. His nose is split open at one end, and one of his teeth is gone, he has lumps on the back of his head, but he has had a good time, and he has come home to hear his mother read about Joseph and his brethren, and rub him with liniment.

There is huge fun in catching on behind, but it requires a great deal of adroitness and decision. The successful lad is he who is ever looking for a ride. He stands with his hands in his pockets, actively devouring the scenery with one eye, while the other is prowling around under cover on the lookout for a good chance. And when it comes he pounces down on the cornice of the sleigh in such a manner as to cover the most part of himself in case he has fallen on a philistine. The solicitude with which a boy shields his tender parts will bring tears to the eyes of a tax collector. But he always gets on the sleigh, and off, too, when urged by a long whip-lash; and when he gets off he rolls himself in a lump and merely lets go, and the fate that always protects boys sends that he bounds into safety. Wood sleighs, with long, strong stakes to catch hold of, are God-sends, but a box sleigh, with a place for two to sit on and make faces at rivals who are breaking down their legs and lungs in a vain attempt to catch up, is not to be despised. Not at all. Heaven bless the farmers who own blue sleighs with floor boards protruding a foot or so beyond the tail-board.

A JEWISH LEGEND.

According to Jewish and Mohammedan tradition, King Solomon, who was wise beyond all other men, knew the language of animals, and could talk with the beasts of the field and the birds of the air. A rabbinical story is told of him, which is in this wise:—

One day the king rode out of Jerusalem with a great retinue. An ant hill lay directly in his path, and Solomon heard its little people talking.

"Here comes the great king," he heard one of them say. "His flatterers call him wise, and just, and merciful, but he is about to ride over us, and crush us without heeding our sufferings."

And Solomon told the Queen of Sheba, who rode with him, what the ant said. And the queen made answer,—

"He is an insolent creature, O, king! It is a better fate than he deserves, to be trodden under our feet."

But Solomon said,—

"It is the part of wisdom to learn of the lowest and weakest." And he commanded his train to turn aside and spare the ant hill. Then the courtiers marvelled greatly, and the Queen of Sheba bowed her head and made obeisance to Solomon.

"Now I know the secret of thy wisdom. Thou listenest as patiently of the humble as to the flatteries of the great."

STRANGE FANCIES.

We all have our own peculiar antipathies, some of which are powerful enough to cause us great inconvenience if brought into exercise. Apropos of this, a curious story is told of a clergyman, who always fainted when he heard

a certain verse in Jeremiah. Zimmerman tells us of a lady who could not endure the feeling of silk or satin, and shuddered when touching the velvety skin of a peach. Mr. Julian Young tells the story of an officer who could not endure the sound of a drum, and ultimately fell dead when compelled to hear it. There are whole families who entertain a horror of cheese; on the other hand, there was a physician, Dr. Starke, of Edinburgh, who lost his life by subsisting almost entirely upon it. Some people have been unable to take mutton, even when administered in the microscopic form of pills. There is the case of a man falling down at the smell of mutton as bereaved of life, and in strong convulsions. Sir James Eyre, in his well known little book, mentions three curious cases of idiosyncrasy: the case of a gentleman who could not eat a single strawberry with impunity; the case of another whose head would become frightfully swollen if he touched the smallest particle of hare; the case of a third who would inevitably have an attack of gout a few hours after eating fish.

THE FAMILY CIRCLE.

If there be any bond in life which ought to be sacredly guarded from everything that can put it in peril, it is that which unites the members of a family. If there be a spot upon earth from which discord and strife should be banished, it is the fireside. There centre the fondest hopes and the most tender affections.

How lovely the spectacle presented by that family which is governed by the right spirit! Each strives to avoid giving offence, and is studiously considerate of the others' happiness. Sweet, loving dispositions are cultivated by all, and each tries to surpass the other in his efforts for the common harmony. Each heart glows with love; and the benediction of heavenly peace seems to abide upon that dwelling with such power that no black fiend of passion dare rear his head within it.

Who would not realize this lovely picture? It may be realized by all who will apply the appointed means. Let the precepts of the Gospel be applied as they are designed to be, and they will be found to shed a holy charm upon the family circle, and make it what God designed that it should be, the most heaven-like scene on earth.

LIVE IT DOWN.

Never flinch before scandal; if your good name is assailed, take it quietly. Breath is wasted in nothing more lavishly than in negations and denials. It is not necessary for truth to worry itself, even if a lie can run a league while it is putting on its boots. Let it run and get out of breath, and get out of the way. A man who spends his days in arresting and knocking down lies and liars, will have no time left for speaking the truth. There is nothing more damaging to a man's reputation than his admission that it needed defending when attacked. Great sensitiveness to assault, on the part of any cause, is an unmistakable sign of weakness. A strong man and a strong cause need only to live an affirmative life, devoting no attention whatever to enemies, to win their way, and to trample beneath their feet all the obstacle that malice, or jealousy, or selfishness throws before them.

THE FAMILY HAMMER.

There is one thing that no family pretends to do without; that is a family hammer. And yet there is nothing that goes up to make the equipment of a domestic establishment that causes one half as much agony and profanity as a hammer. It is always an old hammer, with a handle that is inclined to sliver, and always bound to slip. The face is as round as the full moon and as smooth as glass. When it strikes a nail full and square, which it has been known to do, the act will be found to result from a combination of pure accidents. The family hammer is one of those rare articles that we never profit by. When it glides off a nail-head, and smashes down a couple of fingers, we unhesitatingly deposit it in the yard, and observe that we will never use it again. But the blood has hardly dried on the rag before we are out-doors in search of that hammer and ready to make another trial.

PUNCTUALITY.

We admire punctuality, and we can have but little patience with those persons who are so regardless of it, even in little things, as to continually break their word, under the impression that "It is of no consequence, it will all be understood, and amount to the same thing in the end," as many often say, to excuse their everlasting habit of being false to their word. There are some people who seldom or never do as they promise. They habituate themselves to promise anything and everything without the least thought of fulfilment. We could name some persons of this sort, who in other respects are worthy people; but they cannot command confidence, because their word is not regarded. We can mention young men of promise who are constantly losing ground with their acquaintances, solely by being inattentive to their obligations and promises in little things. A man will soon ruin himself in this way. In all business transactions, in all intercourse with friends, in all engagements, let all do exactly as they say,—be punctual at the minute. This is the way to make other people so, and to make them trust us.

Grains of Gold.

Grief ennobles. He who has not suffered, can never have thought or felt.

Ambition is like a wild horse, which prances unceasingly until it has thrown off its rider.

Be not affronted at a jest. If one throw salt at thee thou wilt receive no harm, unless thou hast sore places.

To wipe the tears from all faces is a task too hard for mortals; but to alleviate misfortunes is within the most limited power.

Leisure is a very pleasant garment to look at, but it is a very hard one to wear. The ruin of millions may be traced to it.

The first fault that a man commits is to take theories for experience; the second to consider his own experience as that of all.

He that is good may hope to become better; he that is bad may fear that he will become worse; for vice, virtue, and time never stand still.

Happiness is a blessing often missed by those who run after pleasure, and generally found by those who suffer pleasure to run after them.

A secret is like silence, you cannot talk about it and keep it; it is like money, when once you know there is any concealed, it is half discovered.

Nothing sits so gracefully upon children, and makes them so lovely, as habitual respect and dutiful deportment towards their parents and superiors.

Some men use no other means to acquire respect than to insist on it, and it sometimes answers their purpose, as it does a highwayman's in regard to money.

It has been ordained by Providence that no individual should be of such importance as to cause, by his retirement or death, any chasm in the world.—DR. JOHNSON.

THE AMIABLE FAILING.—There is no weakness of which men are so much ashamed of being convicted as credulity, and there is none so natural to an honest nature.

Those who are incapable of shining but by dress, would no well to consider that the contrast between them and their clothes turns out much to their disadvantage.

Some have the folly to be ridiculous; some have the vanity to be ridiculous; some have the impudence to be ridiculous; very few have the courage to be ridiculous.

Is there one whom difficulties dishearten—who bends to the storm? He will do little. Is there one who will conquer? That kind of man never fails.—JOHN HUNTER.

DRESS AND ADDRESS.—Both prudence and politeness warn us that a man should attend to his dress and to his address; in youth that he may please, in age that he may not displease.

EFFECTS OF WEALTH.—He is a great simpleton who imagines that the chief power of wealth is to supply wants. In ninety-nine cases out of a hundred, it creates more wants than it supplies.

He that visits the sick in hope of a legacy, let him be never so friendly in all other cases, I look upon him in this to be no better than a raven that watches a weak sheep only to peck out the eyes of it.

The art of pleasing consists in being pleased. To be amiable is to be satisfied with one's self and others. Good humor is essential to pleasantry. In society good temper and amiable spirits are almost everything.

It is easy in the world, to live after the world's opinion. It is easy in solitude to live after our own. But the great man is he, who, in the midst of the crowd, keeps, with perfect sweetness, the independence of his character.

When a rich quaker was asked the secret of his success in life, he answered, "Civility, friend, civility." Some people are uncivil, sour, sullen, morose, crabbed, crusty, haughty, really clownish, and impudent. Run from such, as from your life. "Seest thou a man wise in his own conceit? there is more hope of a fool than of him."

Years rush by us like the wind. We see not whence the eddy comes, nor whither it is tending; and we seem ourselves to witness their flight without a sense that we are changed; and yet time is beguiling man of his strength, as the wind robs the woods of their foliage. He is the wise man, who, like the millwright, employs every gust.—SCOTT.

If we give only to receive, we lose the fairest objects of our charity—the absent, the sick, the captive, and the needy. When we oblige those that can never pay us again in kind, as a stranger upon his last farewell, or a necessitous person upon his deathbed, we make Providence our debtor, and rejoice in the consciousness of a fruitless benefit. He that gives nothing but in the hope of receiving, must die intestate.—SENECA.

MAGIC OF A WORD.—Mother, is a word to which every bosom responds. It finds its way to our hearts in our youth, and retains its hold upon us in our age. If fathers are looked up to for precept, principle, and example, mothers are relied on for tenderness and endearing affection. Fathers are strongholds of safety; mothers are sources of love and consolation. The word Mother is as a soft breeze coming up from the valley—sweet, soothing, and grateful; cooling the fevered brow, calming the ruffled spirit, and tranquillizing the agitated heart! What voice is over like the tender, soft voice of a mother?