

**The Past and the Present.**

Let us cast a glance on the world around us. You know that even now many tracts of the earth's surface are still covered with putrid morasses and impenetrable forests, the cold and damp atmosphere of which gives birth to noxious insects, and breathes forth devastating epidemics; which are almost entirely the dwelling place of the savage, and only afford to the few creatures in human form who are to be found in them, the means of dragging on a dull and joyless existence, without freedom, usefulness or dignity. History informs us that the countries which we inhabit at the present day bore the same character formerly, to a large extent. Now, the morasses are dried up; the forests cleared out, and changed into fruitful plains and vineyards, which purify the air and fill it with an enlivening fragrance; the rivers are taught to keep their channels, and enduring bridges are laid across them; villages and towns have arisen, with lasting, convenient and agreeable dwelling places for men, and public buildings which have already braved the storms of centuries, for the purposes of mental improvement and elevation. You know that even at the present day, savage hordes roam over vast wildernesses, sustaining a miserable life upon impure and loathsome food, and yet, when they encounter each other, engaging in warfare for the sake of this scanty subsistence and of their wretched implements of acquisition and enjoyment,—extending the fury of their vengeance even to the destruction of their fellow men. It is in the highest degree probable that we are all of us descendants of such races; that our forefathers, at least in some of their generations, have passed through this condition. Now, men are assembled from out the forests, and united together in masses. In the savage state, each family had to provide for its manifold wants immediately and without assistance from others, and had even to fabricate for itself the utensils for that purpose, with much loss of time and waste of energy.—Now, the human multitudes are divided into classes, each of which pursues its own profession, to the acquirement an exercise of which its life is devoted; providing in its own department for all other classes, and provided for by them with respect to all its other wants; and thus are the forces of nature confronted by the greatest possible amount of the cultivated, ordered, and combined powers of reason. The laws and their administrators interpose an insuperable barrier to the fury of personal warfare and spoliation; quarrels are adjusted without bloodshed and the lust of crime is scared, even in the dark recesses of thought, by severe punishments; and thus is internal peace secured, and every one moves in safety within the limits which are prescribed to him. Large masses of men, frequently spring from the most dissimilar origin, and united one scarce knows how, encounter similar masses in as wonderful combination, and neither being fully acquainted with the power of the other, reciprocal fear steps in between them, so that men are sometimes blessed even with external tranquility; or when it does come to war the superior power is often weakened and worn out by the determined resistance of its opponent, and instead of the secretly desired extermination, peace is the result; and thus has sprung up a kind of international law between independent countries, and from opposing tribes a kind of republic of nations has arisen. We know how, even to the present time, the timid savage, unacquainted even with himself, finds a hindrance or a destroying foe in every power of nature. To us science has laid open our own spiritual being, and thereby, in a great measure, subjected to our will the outward physical forces of the universe. Mechanics have multiplied almost to infinity, the feeble powers of man, and continue to multiply them. Chemistry has introduced us into many chambers of the secret workshop of nature, and enabled us to apply her wonders to our own uses, and to protect ourselves from the injuries they might otherwise inflict upon us. Astronomy has scaled the heavens for us and measured their paths.

The number of vessels constructed last year for the internal navigation of Russia was 11,990.

**Coal for Fuel in Western Steamboats.**

A letter from Prof. Walter R. Johnston, of Philadelphia, is published in the Louisville Courier, on the use of coal on the Western Rivers, for fuel. He says—

As to the question of the relative value of coal, compared with dry beach, ash, and cotton wood, I am not aware that any direct experiments on the latter kinds of wood, have as yet furnished the data for computing that relation. You may have observed that in my report on coals, I have stated that the subject is yet unexhausted, and particularly that the coals of the West and Southwest, were but very imperfectly represented in the series of samples sent for trial in 1843. Mr. Bull, who made experiments on the woods some twenty-five years ago, also experimented on certain coals, and obtained comparative results between weights of coal and cords of wood. But the western coals, those of Illinois, Indiana, and Kentucky, were not, I think, then brought into notice, and I am under the impression that cotton wood was not among the kinds submitted to trial by him. One object I had in view in requesting the Government to continue the experiments on coal, was to perform at the West a second series of trials on the coals and woods found on the Western lakes and rivers. From all that I do know of the Western Coals, and from all that I have learned from others, of the wood of the Western country, I do not entertain a doubt as to the great economy of using coal wherever it can be had at a moderate price.

It is very certain, that with such prices as have hitherto ruled on the Ohio and its branches, one could hardly suppose that any other fuel than coal would be used, if the trips were confined to the coal region, or to a moderate distance beyond it.

The grates for using coal will in general be of less depth than those for the use of wood; the bars will be from one half to three quarters of an inch apart. But for different coals different dimensions of grates will be required. I suppose one difficulty experienced on the Western boats will arise from the attempt to burn too much coal at a time on the bars, by which means the fire will become over-heated and fused, and if the clinker be also heated to the fusing point, the sulphur will attack the iron and run into compact masses with it, preventing the clearing of the fire. A thin stratum of coal on a grate raised to within a few inches of the bottom of the boiler, will probably be found the most advantageous mode both for the economy of grate bars, and for that of fuel. If the boilers do not make steam as rapidly as with wood, the obvious expedient is not to increase the depth of the stratum of coal, but to enlarge the area of the grate.

**Beautiful Ornithological Display.**

An Illinois paper mentions a fine collection of birds all taken from the Illinois prairies and waters, which numbers some four hundred varieties, of various sizes and colors, ranging from the swan down to the humming bird. So carefully and nicely were they preserved, that they had every appearance of life.

Beside birds, there were many kinds of reptiles, quadrupeds, and other "creeping things," which live upon, and burrow in the wide spread prairies. A visit to this museum is characterized as a cheap way indeed to see a great and beautiful variety of the warbling and creeping tribe which populate the Western country. The proprietor is on his way south, where he intends making a large addition to his museum, and afterwards the Eastern States are to see the sight.

**Man's Friends.**

Man has three friends in this world—how do they conduct themselves in the hour of death, when God summons him before his tribunal? Money, his best friend leaves him first, and goes not with him. His relations and friends accompany him to the threshold of the grave, and then return to their homes. The third, which he often forgets during his life, are his good works. They alone accompany him to the throne of the Judge—they go before him—speak, and obtain mercy, and pardon for him.

**Thrashing by Music.**

A modern traveller in Germany gives an amusing account of the manner in which grain is thrashed there—a business, to be expert in which, one would think, must require a master for instruction, as much as any other art or accomplishment. It is not unusual for pedagogues in thrashing idle urchins, to lay on the blows in regular crescendo, running up through all the gradations to the loftiest "staccato," but we never heard of musical harmony being introduced into grain-thrashing before. Yet, after all, what is the story of Amphion building Thebes by the shakes of his hurdy gurdy, but an allegorical illustration of the same benefit of lightening labor by music!

But to our extract. "The Germans," says the writer, "thrash with a perfect regard to time, in all the alterations of tripple and common measure, making the transition from one to the other with the greatest exactness—there are sometimes no fewer than seven or eight: when it is a simple quarter, and one of the performers happens to drop out, which is frequently the case, the transition is immediately, and without the least interruption into triplets. Occasionally the effect is graced by some very delicate gradations of forte and piano, *raliemento*, *crescendo*, *morendo*, *accelerando*,—and the whole executed with as much precision as if a note-book lay before each. When the piano is to be particularly delicate, the tips of the flails are used, which affords an opportunity of combining grace with dexterity, it is then the merest, scarcely audible tap, and costs the least possible effort. Then comes the crescendo, swelling into a tremendous barn-echoing staccato—down-right thrashing in fact, and what I particularly wish to enforce upon the farmer, the flail, the whole movement is never raised higher than the head, which I could not help especially taking note of, for the good of our practical agriculturists, when I recollect how much unnecessary brawn is expended on our thrashing floors to no purpose. Thus we see his genius for music never forsakes the German in any situation or occupation of life, it follows him to his commonest employments, and no doubt to their advantage, on the principle of "studio fallere laborem," in making it in all similar exertions, an arithmetical operation.

**Cunning of the Fox.**

The cunning of the fox has indeed been ever proverbial, and, even so long since the days of Æsop, he figures as the chief personifier of that quality. But, in many of the instances which had been related, we cannot refuse it the higher appellation of wisdom, as possessing the excellency implied in the definition of its being the "means best adapted to the ends most conducive of its own well being." The following instance is illustrative of the remark of Pliny, that no degree of taming will entirely divest the animal of its ancestry. A fox had been partially tamed and was kept fastened by a chain to a post in a court yard, where he was chiefly fed with boiled potatoes. But the animal seems to have thought that a desirable addition might be made to his fare from the numerous fowls that strutted around him, but whose caution kept them beyond the reach of so formidable an enemy. His measures were soon taken; and having bruised and scattered the boiled potatoes which he had received for his dinner at the extremity of the space which the length of his chain enabled him to command, he retired, in an opposite direction, to the full extent of his chain, and assumed the appearance of utter regardlessness of all that was passing around him. The stratagem succeeded; and when some of the fowls had been thrown so much out of their guard as to intrude within the circle of danger, the fox sprung from his lurking place, and seized his prey. The habits of cautiousness displayed by this animal are also significant of conclusions drawn by observation from experience. For, when followed by dogs, it will not run through a gate—though this is obviously the most ready passage: nor in crossing a hedge will it prefer a smooth and even part—but the roughest, where thorns and briars abound, and when it mounts an eminence, it proceeds obliquely, and not straight forward. And

whether we suppose these actions to proceed from a desire to avoid those places where traps may probably have been laid, or from knowing that his pursuers will exactly follow his footsteps, and he has resolved to lead them through as many obstacles as possible,—in either case an estimation of causes and consequences are to be discerned.

**A Hanging Bridge.**

A late number of the Journal des Debats describes in the following manner the opening of the hanging bridge of Kerentrech, which is spoken of as one of the most remarkable objects of modern art in France. It is thrown over the little river Scorfi, at the place where it crosses the road from Lorient to Paris, at the bottom of the beautiful avenue of Chazelles. The bridge differs from all those which have been heretofore built, inasmuch as its power of suspension rests entirely on cables of iron wire. The total length of the bridge between the pedestals which cover the anchoring galleries, is 292 metres, that of the flooring, 179 metres, 50 centimetres, its width 6 metres, thirty centimetres, of which 4 metres 90 centimetres are for the carriage way, and 70 centimetres for each foot path.

The flooring is composed of 146 small timbers, finished at the ends with bronze, covered over by a double planking of pine boards; it is suspended by cords of iron gracefully disposed, four cables of iron wire of 16 centimetres diameter, reposing on elegant masonry porticoes of 17 metres height over the road.

Each cable is formed of 1,650 iron wires of 340 metres length, the wires present thus a development of 2,214,000 metres, or 561 post leagues, the distance which the workmen employed in arranging them have been obliged to pass over several times. The cables surround the anchorage posts, and form of themselves only one and the same cable which is wound four times about itself. Each cable could, without breaking, be submitted to a tension of 800,000 kilograms; the tension was carried, at the moment of the trial, to 200,000 kilograms; in common times, it would not exceed 140,000 kilograms, and a single cable might thus bear the whole of the bridge.

This bridge of Kerentrech, combines in the highest degree, all the qualities of elegance, precision, and solidity, which distinguish the most beautiful hanging bridges, and nothing can give a higher idea of the care bestowed on the building it, than the fact that not a single wire broke on the trial, that not a bolt or a timber has bent.

The construction of this bridge is the work of the skillful engineer, M. Leclerc, to whom the city of Lorient is also indebted for its magnificent dock, in the building of which so many before him had failed. M. Leclerc was admirably seconded by a young and skillful engineer, M. Noyon, whose care and attention has contributed much to the success of this magnificent work. Trees set out at the entrance of the bridge, and sphinxes of colossal dimensions placed on the anchorage pillars, will complete the monumental aspect, but these additions would cost 30,000 francs, and must be waited for till better times.

**Gases.**

In breathing air we use the oxygen, and send it out carbonic acid gas, which is heavier than the atmosphere, and sinks, passing into plants and vegetables.

Carbonic acid gas also exists in great quantities in some caves and valleys, rendering them incapable of supporting life, and this property has often been attributed to some plants, as *upas*, &c.

Hydrogen gas is one-fourteenth the weight of air, and has peculiar properties. It is so light, and the particles so minute that it is difficult to make a substance that will contain it, and it is found to be retained in balloons better by mixing it with carbon, making carburetted hydrogen.

**Watch Chain.**

A small watch key chain, six inches long, contains ordinarily 42 rivets and 63 links in every inch, in all 630 pieces, and yet the entire chain will weigh only one grain and three quarters.