

THE DETROIT RIVER TUNNEL.

A Detroit paper gives the following interesting account of a visit paid by a member of its staff to the works now in progress on the tunnel which will connect Windsor with Detroit:—

Various have been the opinions entertained of the feasibility of constructing a tunnel under the Detroit River for the use of the several railroads running to and from Detroit, which shall admit of the passage of trains of cars through it, bearing passengers and freight that have hitherto been transported across the river in boats. As this gigantic international enterprise is now in progress of construction, any information relating to it cannot fail to be of interest to the reading public.

On the 24th of June we availed ourselves of the opportunity afforded us, by the courtesy of the contractors and engineers, of descending the shaft and passing up the tunnel as far as opened. This we did under the escort of Mr. E. C. Clark, of the corps of engineers. We had not the comforts of a Pullman car, nor of an ordinary construction train; so we prepared to rough it, and exchanged hat, coat and boots, at the office for rubber ones, better adapted to the moist condition of the line of travel we were about to enter upon.

The shaft that leads from the surface to the drainage tunnel is fifteen feet in diameter, and extends down one hundred feet. We stood upon the edge of a large bucket which is used for lowering men and materials, and for bringing up the excavated earth, one of us upon either side, holding to the strong metallic rope by which we were suspended, much after the old oaken bucket in the well.

The engineer ran us quickly down the shaft. As the rope unwound from the wheel above, it gave us a rotary motion in our descent. Arrived at the bottom of the shaft we stepped off from the bucket, and by the light of a small lamp entered the horizontal tunnel, which is five feet in diameter and one hundred feet below the surface of the river. A temporary rail track has been laid in this tunnel to facilitate the carriage of earth to the shaft for elevation in the same bucket employed for our descent. We walked up this track more than seven hundred feet, or about forty-five rods. As the diameter of the tunnel is only five feet; as a rail track traverses its entire length for convenience in taking in materials for use, and in removing excavations; and as it further does duty in drainage, for which it is specially constructed, we were obliged to take a stooping posture, not unlike that of the Black Creek or the Grecian Bend, and with lamp in hand to walk this fourth of a mile, in and out, through muddy water of one to four inches in depth, which the next day gives one a gentle reminder of the unusual posture he was compelled to take during his subterranean explorations.

When we arrived at the inner end of the tunnel we found three men at work. Two of them were engineers, and the third was shovelling back the dirt out of their way. Beside these, two other men find employment in loading the buckets and running them to the shaft upon the hand car that traverses the tunnel, whence they are elevated to the surface. There are two buckets used for this purpose, one of which is filled while the other is run out and emptied. Five men are usually on duty in the tunnel at a time. There are three relays of these men employed, each relay working eight hours during the twenty-four. The work is thus constantly progressing, day and night, at present at the rate of about ten feet a day on the American side, with a somewhat slower progress from the other side.

The drainage tunnel has a slight ascent from either side of the river toward the centre, so that water entering it runs outward and settles into the "wells," of about ten feet in depth, which are continuations of the entering shafts below the drainage tunnel. The water which enters these "wells" is pumped to the surface and runs into the river.

When persons within the tunnel are quiet, about the only noise usually heard arises from forcing fresh air through a pipe running down the shaft and extending along the top of the tunnel, to where the workmen are engaged. By this means the air within the tunnel is kept pure. The firing of guns, the blowing of steam whistles, and like noises above, are not heard within the tunnel; but the concussion produced in the water by the passage of large vessels, is conveyed to and through the solid and moist earth, and distinctly heard. The temperature in the tunnel is nearly uniform, and stands at about 53 degrees, except when slightly raised by the breath of workmen and the burning of their lamps.

The shafts are bricked up, and the tunnel is kept bricked to within a few feet of where the excavations are in progress, so that when completed, the drainage tunnel will be a hollow cylinder, surrounded by solid masonry, and about two hundred rods in length, slightly the highest in the middle, so as to give a down grade toward either shore, for the carriage of water to the "wells" for pumping to the surface.

There are to be two main tunnels for the passage of cars, whose interior diameter will be 18 feet 6 inches. These will be just above the drainage tunnel, in the middle of the river, where they are the lowest, and 50 feet apart, both being on the same grade, and one used for the passage of cars in each direction, so as to lessen the liability to accidents. But these main tunnels for the accommodation of trains of cars will not be commenced until after the completion of the drainage tunnel.

The success which has attended the opening of the tunnel thus far, and the nature of the earth yet to be traversed by it (as indicated by borings), give good reason for believing that the work will in due time be successfully completed. The opening of this great international thoroughfare for unbroken transit by rail, will strengthen the existing bond of union between the Canadas and the States, and greatly promote the material interests of Detroit, and of the large extent of the country traversed by railroads leading to this city.

Is the mind a ponderable or an imponderable substance: an essence, vapor, or an indescribable something which cannot be grasped, felt or withheld?

Man thinks, studies, invents, tires the brain by overwork, and loses his reason; rests his intellect, becomes calm, uses restoratives, and again thinks.

When we reflect that a power of endurance can be imparted to the brain, and that weak minds have been restored to strength by Fellows' Compound Syrup of Hypophosphites, we cannot but conclude that the subtle power is really ponderable matter, from the fact that the ingredients are supplied which render it support and give it validity. Persons who study hard should preserve their balance of power by using the Syrup.

SCIENCE AND MECHANICS.

The meeting of the American National Association for the Advancement of Science opened at Dubuque, Iowa, on the 21st instant.

A project for the formation of a tunnel under the Straits of Gibraltar has been presented to the Spanish Minister of Agriculture. It is intended to run from Algeiras to Ceuta.

A new hygrometer made by G. Smith, in Paris, consists of strips of paper dipped in a cobalt salt solution containing common salt and gum arabic. In dry weather it is blue, and in wet, rose red.

ARTIFICIAL PARCHMENT.—The Germans are applying the paper tissue known as artificial parchment for the manufacture of artificial sausage skins—a novel but highly characteristic idea. This membrane is rather indigestible.

The plague of flies at present raging in Paris, which has been attributed by some to the great number of bodies of animals and men that remained for long unburied during the siege, is now the subject of discussion among the French entomologists. M. Blanchard, of the Academy of Sciences, says they are vegetable and not animal feeders, and thinks their enormous increase is owing to the destruction during the siege of the birds that formerly fed on them and their eggs.

The Academy of Sciences in Bologna has announced that a prize of 1,200 lire (\$240), the "Aldini Prize," will be awarded to the author of the best scientific experimental essay on galvanism or dynamic electricity. Essays intended for the competition must be sent in between July 1, 1872, and June 30, 1874, and must be written in Italian, Latin, or French. They must be either written or printed; but, in the latter case, must not have been published previously to the two years above mentioned. Each essay is to bear a motto, and to be accompanied with an envelope stating the name of the author. They must be addressed to the Perpetual Secretary of the Academy of Sciences of the Bologna Institution.

A correspondent of the *Scientific American* says:—About six months ago a mesmerizer was performing in this place for about a week. Our nearest neighbour's little daughter, a pretty bright child, became a very interesting subject; and during the stay of the professor was nightly under his influence, sometimes for two hours. Her mind seemed in a strange way the day after he left, and in two days she was taken with a severe headache with darting pains; these terminated in a stupor, and, for about six months, she has been under medical treatment. The physicians say she has no disease. The poor child is an object of pity, having pined away to a skeleton and become perfectly helpless and idiotic. She does not know her own wants; never asks for food, merely opens her mouth when it is touched, and takes it like a young bird.

MILITARY BREECLOADERS.—The *Oesterreichische Militärische Zeitschrift* furnishes the annexed comparative table of the times required to load and fire one round of ball-cartridge from the military breechloaders hereunder specified, two seconds being allowed in each case for aiming:—Austrian Werndl rifle, 7½ seconds; Bavarian Werder rifle, 6½ seconds; Russian Berdan rifle, 7 seconds; English Martini-Henry rifle, 7 seconds; Dutch Beaumont rifle, 7 seconds; Italian Vetterli rifle, 7 seconds; Swiss Vetterli repeating rifle, 4 seconds (magazine charged beforehand); Fruhwirth repeating rifle of the Austrian Gendarmerie, 4 seconds (magazine charged beforehand); Swiss Vetterli and Fruhwirth repeating rifles used as single-fire rifles, 7 seconds. In the Fruhwirth repeating rifle twelve seconds are required for filling the magazine after every eight rounds.

The present summer has been characterized by unusual heats in almost every part of the Northern world, and all classes of philosophers, the weather wise especially, have been at their wits' end to account for it. Professor Tacchini has been making direct enquiries at headquarters, and has received the most satisfactory explanation. By means of spectrum observations and other carefully conducted experiments, he has discovered that for some time past our great luminary, the sun, has been throwing off immense and unusual volumes of magnesium gas from all parts of its surface. Magnesium is one of the most inflammable and fiercely burning substances in nature, when once set a-going, and the explanations of Professor Tacchini settle the whole matter. When the thermometer falls, it may safely be concluded that the supply of magnesium in the sun's atmosphere has diminished.

SAWING WOOD BY ELECTRICITY.—The latest novelty in the electric line is the employment of the battery-current to saw wood, without a saw. It is well-known that the resistance to the passage of a current is inversely as the sectional area of the conductor. In fine wire, for instance, this resistance is very great, and the arrested force being transformed into heat may be sufficient to render the wire white hot. This is the principle of the various gas-lighting and fuse-firing electric apparatus, in which the gas is lit or the fuse exploded by the white hot wire. It has also been employed instead of the knife in certain surgical operations, the wire being found to burn its way rapidly and smoothly through flesh, etc. The latter application, according to the *Scientific American*, has been extended by Dr. George Robinson to cutting wood also, the electrically-heated platinum wire proving as effective, without any expenditure of manual strength, as a saw in the hands of a strong man. The surfaces are slightly charred.

Professor Kletinsky, of Vienna, has been examining into the cause of the disease called small-pox; and also has closely studied those persons who suffer from this contagious malady; he found that in every instance they were surrounded by swarms of flies. As he lived just opposite to the small-pox hospital, he made the experiment of putting a vessel containing pure glycerine on the outside of his window ledge. The flies came to taste the sweet liquid, and were caught so that they could not get away from the sticky mass without a hard struggle. In their efforts to get free they rubbed off all the extraneous matter that clung to them. The professor then examined the glycerine through a microscope, and found in it the same kind of cells that are found in persons suffering from the small-pox, but which are never found in flies. This discovery is of great importance for every class of the population, as it shows that they should use every means to banish flies from the sick room, if they do not wish the disease to be propagated by these insects.

MISCELLANEOUS.

The *Sindian* states no rain has fallen at Kurrachee for the past two years!

The *N. Y. Sun* says that Uncle Tom's eldest son, Mose McGruder, is still alive, and lives with one of his sisters at Indianapolis. Another of his sisters is in Canada.

There still lives in England a clergyman named Cheese, who, more than forty years ago, had as pupils two young men named Tate and Manning. The former is now primate of the Church of England; the latter is the famous Roman Catholic Archbishop of Westminster.

The celebrated Paris surgeon who so successfully extracted from Garibaldi's leg the bullet which he received at Aspromonte, is now staying in England for performing a similar but still more difficult operation (an amputation) on a well-known English gentleman.

La Muerce is informed that 1,100 French emigrants from Alsace and Lorraine have sailed from Havre on a steamer chartered by Mr. Vanier, agent of the Société Forestière of France, and that their arrival at Quebec may be expected very soon. It is also stated that these emigrants will be settled in Beauce and in the valley of the Restigouche.

The historical tree, known in Mexico as the "arbol triste" under which Fernand Cortez sat and wept upon the memorable night when the discord and mutinous spirit of his companions had destroyed the fruit of all his previous efforts, has been smeared with tar and petroleum and set on fire. The authors of this act of vandalism have not yet been discovered.

Fashion is proverbially changeable and tyrannous, but we confess to being a little startled by the latest *en dit* with regard to ladies' hair, which is, according to the *Journal de Paris*, to be worn "blue" until further notice. What precise tint has been selected for this freak of fashion is not stated, but the dye is cast, and blue of some shade is to be the hair dye of the immediate future.

It appears that the "Internationals" have distinctive dresses and ornaments to indicate membership. Here is the catalogue as given in a circular recently sent out by the Governor of Upper Austria:—"Shirt pins of white polished metal in the shape of an old-fashioned axe, or of two hands grasping the handle of a hammer; leather caps with raised peaks; red neckties, blue blouses, and red cockades on the inner side of the coat."

About two years ago all Paris and nearly all France was shouting "A Berlin." M. Thomas, President of the Chamber of Notaries, seems to have been as confident as any one, for on the 23rd of July he offered through the *Paris Moniteur* a wager of 200,000 to 100,000 that the French would be at Berlin on the 15th of August. The next day M. Mouillat, a merchant, sent a letter accepting the wager, and the sequel is that a law suit will soon begin at Paris to compel M. Thomas to pay.

IS LIQUIDATION.—A story of a singular kind comes from Calcutta. Two men were apprehended at Madras for the forgery of bank-notes. They said that if they were allowed to go to a certain holy hill they would show where the forged notes were hidden, but Europeans were not to accompany them. The offer was accepted, and the men went off with a native escort, who, on returning, reported that the men had jumped into a holy tank and been drowned. This turned out to be true. The men were in liquidation.

An English coachman was fined 100 francs in Paris last week for striking a Republican guard with his whip. The former wanted to drive through a certain alley in the wood of Boulogne against the regulations, and the latter, on taking hold of the horse's head to prevent him, received a slash across the face. The Englishman's counsel put up an ingenious defence. He said it was considered a great insult in England for anybody to seize hold of a coachman's horse—even the police were afraid to do it—and it was consequently only natural that his client lost his temper. And, we may add, it was only natural he lost his 100 francs.

An enterprising Frenchman, M. Delahaute, has completely altered the aspect of Venice, and rendered it one of the gayest places of resort in Italy. The Lido is transformed into a bathing place, beautifully decorated, and supplied with *cafés* and restaurants to which little steamers ply to and fro the whole day long. The Feast of the Redemption has just been celebrated with all the splendour of ancient times; the whole population of Venice, according to custom, passed the night in gondolas on the great lagoon in order to salute the rising sun. Never was a more magnificent spectacle beheld than that of the ten thousand ladies in full dress costumes, covered with the most splendid jewels, as they sat on benches covered with red velvet all along the shore, while the gondolas glided by, each one all gay with coloured lamps, and provided with music to serenade them as they passed. At the moment of the sun's appearance above the horizon, a tremendous shout bursts from the vast multitude, banners are unfurled, the bells ring from every steeple, and the various bands strike up the solemn Morning Hymn.

The author of *La Prusse et la Russie*, dedicated to Prince Bismarck, "Geneva," prophesies that the terrible experiences of the years 1870-71 were but the prelude to a struggle far more momentous, which will deluge Central Europe with blood, and that within the present decade. It is not difficult to divine from the title of the pamphlet between what races and for what objects such a contest will commence. Prussia and Russia must eventually (according to the author) grapple together in mortal combat for the supremacy in Central Europe, and both are silently preparing for the ordeal. Inasmuch as the anti-German tendencies of the Czar are well-known, the author of this work affirms that the death of the Czar would be the signal for an immediate outbreak of war, if indeed circumstances do not bring it about during the lifetime of the present Emperor, who is supposed to wish for the continuance of peace, so long as his subjects refrain from forcing him into an opposite policy. The part which Poland will take in the conflict between her partitioners and oppressors is anxiously reviewed and considered in the pages under notice; the establishment of a new kingdom of the now divided sections of that unhappy land is deemed to be a certain result of such a struggle, as equally in the interest of either combatant, the want of intermediate power being felt by both the giant nations of the North.