seen from Calcara Creek, with the Great Harbour and Fort St. Angelo in the centre, and the city proper stretching away seawards in the background.

The history of Malta has been an eventful one. It is said to have been originally colonized by the Phœnicians, but whether this be the truth or not, it certainly was once in the possession of this enterprizing nation, and from them passed into the hands of the Carthaginians. The Romans, in turn, won it from Carthage during the Second Punic War, and after the fall of the Roman empire it was seized by the Vandals in the year 455. It was then occupied successively by the Goths, the Greeks, the Arabs, the Normans, the Germans, the French, and the Spaniards. In 1530 it was granted by the Emperor Charles V. to the Knights of Rhodes or Hospitallers, also called the Knights of St. John of Jerusalem, who took refuge here, under their celebrated grand-master Villiers de Ple-Adam, after they were driven from Rhodes by the Turks. The Hospitallers, or Knights of Malta, as they now called themselves, occupied the island until 1798, when the grand-master Hompesch ceded it to Napoleon. In 1800 it was captured by Nelson, and since that time it has been occupied by the English, who have made it an important military and naval station.

THE FALLS OF NIAGARA.

At the second annual exhibition of the Society of Canadian Artists, held in this city in February last, some of our readers may remember that we had occasion to make favourable mention of a large oil painting by Mr. Vogt, representing the Falls of Niagara in summer. The picture attracted considerable attention from the visitors to the exhibition, and this week we have made a double page illustration from it. In our issue of Feb. 5th, we gave a Leggotype of the "Whirlpool" in the Niagara river, nearly three miles below the Falls, with a description of that remarkable maelstrom. The "Falls" are, however, the crowning attraction of the Niagara region. Because of these: to listen to their mighty roar; to watch the immense bodies of water tumbling over the ledges of rock into the gulf below; to see them surging and foaming underneath, and sending up the white, soft spray in a perpetual cloud; it is because of these wondrous sights and sounds that the native harpy is endured, and visitors meekly suffer themselves to be plundered.

Mr. Vogt brings these noisy and tumultuous cascades into full view. But all the attractions of the Falls can never be appreciated at a single glance. One has to see them time and again; to listen to their roar when he is miles away from them, to watch the beautiful rainbows in the spray, to have his head in a whirl from gazing at the terrible monotony of that endless chain of water ever and anon tumbling over the rock. During the long ages in which these waters have continued to flow on in their journey to the sea, it is evident that the Falls have been gradually receding. It is believed that several thousand years ago the river descended in a single stream over a ledge of rock three hundred feet high into what is now the whirlpool. Since these ages the waters have dug out their deep channel three miles further up the stream, and it is computed that at present the Falls are receding at the rate of about three feet a year, though the point is not very clearly established. It has also been stated that the falls diminish in height, as they recede towards the south at the rate of forty feet to the mile. The number of the falls, too, seems to have varied with time. As already stated, when the river took its leap at the whirlpool, it is believed that there was but a single cascade, and at other points there are indications of their having been more than at present. When Father Hennepin discovered Niagara there were four falls, one of which, on the Canadian side, has since disappeared. These facts show that Niagara is slowly but surely losing her attractions, though they will doubtless last her through this and the next fifty generations.

WILHELMSHOHE

The residence assigned to the fallen Emperor of the French during his captivity in Germany, is one of the noblest palaces of the Rhine country and one which has been occupied by a long line of princes. The palace stands in the midst of a natural park, at a short distance from Cassel, on what was the site of an old convent that was destroyed by fire in the fifteenth century. On the convent land Maurice, Landgrave of Hesse, built, in 1606, a small shooting-box, or country residence. This building suffered a good deal during the Thirty Years' War, and what was left of it was pulled down, in 1787, to make room for the present château. In 1798 the building was completed, and since that time has been regularly occupied as a summer residence by the princes of Hesse-Darmstadt, who spent much care and money in the decoration of both building and grounds. From 1807 to 1813, Jerome Napoleon, then King of Westphalia, occupied the palace, which was called after him, Napoleonshohe. Since its assignment by the King of Prussia to its present Imperial occupant and his suite, it has been the object of much curiosity to distinguished travellers in Germany, and all who can, obtain the King's permit to visit his Imperial captive. The ex-Emperor, it is reported, enjoys dignified though constrained retirement with great equanimity, and is treated by the Prussians with every mark of distinction. To a nobleman who recently accompanied the Duchess of Hamilton on a visit to Napoleon, the latter, referring to his surrender, spoke in very warm terms of the kindness of the King, thus proving the fallacy of the highly-coloured newspaper reports of the King's violence and uncivil conduct. Napoleon also expressed his pleasure with the great good will shewn to him since his reverse of fortune by many Englishmen of distinction. When he met his cousin, the Duchess, he was very much affected for a time. Her Grace was a guest for two days at Wilhelmshohe, where her Imperial cousin may possibly yet have to spend twice as many months before he is restored to freedom.

THE BURIAL OF GEN. DOUAINE AT SAARGEMUND.

At the storming of the heights of Spicheren, between Forbach and Saarbruck, the French Brigadier-General Douaine was seriously wounded in the left arm by a bursting shell. He was removed to Saargemund, where he was found dying by a battalion of Prussian infantry who entered the town after the victory at Niederrothenbach. The General died on the morning of the 7th of August, and in the evening he was buried by the Prussians with military honours. At six o'clock the *cortége* left the sous-prefecture and proceeded to the cemetery, followed by the whole battalion, and by crowds of private citizens. Following the band, and immediately before the coffin, which was borne by non-commissioned officers, walked the adjutant of the regiment carrying, on a cushion, the General's medals and his cross of the Legion of Honour. On the coffin were the General's *képi*, gloves, and sword, with a wreath of flowers. On arriving at the cemetery the coffin was placed in position ready to be lowered into the grave. Burial service there was none, and the only ceremony, simple and expressive, was performed by General Von Woyna, who plucked a flower from a wreath and laid it upon the coffin, saying, as he did so: "The offering of a Prussian soldier to a brave fellow-soldier fallen in battle." The coffin was then lowered, the grave filled up, and the Prussians, having given their testimony of respect for a fallen foe, left the town Pariswards.

SCIENTIFIC.

At the last annual meeting of the British Association, recently held at Liverpool, the President, the learned Professor Huxley, in his Address, discussed the subject of the relationship of life and matter, upon which the London *Daily News* remarks:—"The Address of the President of the British Association illustrates in a very remarkable manner the practical utilities of Science. One of the largest and profoundest questions which which Science deals is that of the relationship of life and matter, yet the discussion of that question brings us into immediate contact with those terrible epidemics which scourge all organized beings from the insect up to man. Dr. Huxley reviews the progress of scientific discovery in its inquiry into the genesis of life, and pronounces a strong opinion in favour of the theory that only life begets life, and against the theory that life can ever spring from death. With true scientific modesty, he declines to assert that at no period in this planet's history has living protoplasm ever been evolved from matter which was not alive, but he insists that no such evolution has ever been shown to have taken place within our experience or observation. So far as that experience goes, an impassable line exists between living matter and matter which is not alive, and the living never comes out of the dead. The experiments which demonstrate this scientific truth lead us into the realm of inquiry with which Dr. Tyndall familiarized us early in the year in his striking lecture on "Dust and Disease." Dr. Tyndall's experiments completed the demonstration of the doctrine of Biogenesis—that is, the doctrine that life springs only from life, and never from dead matter—by showing, first, that ordinary air is full of particles, which are very often the floating germs of animal and vegetable forms, and secondly, that filtration through cotton wool allows only physically pure air to pass. These minute forms, floating in the dust which the sunbeam reveals, are the origin of all the life which putrefaction and other forms of fermentation produce. It is this minute life, sometimes in the form of fungi, sometimes in that of minute animalculæ, which is the cause of infectious and contagious disease. The terrible disease called Pebrine, which has been so fatal to silkworms, has been demonstrated by M. Plasteur to be caused by the development and multiplication of minute organisms in the body of the silkworm. These organisms pass from one silkworm to another by infection, by contagion, and by transmission in the egg, and develop into a disease which greatly corresponds to the cholera in man. M. Plasteur has consequently been able to suggest a method of extirpating the disease which has been completely successful wherever it has been carried out. A similar discovery had previously been made as to the cause of the grape disease, and Science has thus saved to France the silk crop and the grape crop, and shown the way to their future safety. But even greater results than these may be expected from these investigations. The cholera and the scarlet fever are probably both due to minute organisms which float in air or water, and, being received into the body, develop and propagate there. The germ theory of life is leading us to so complete a knowledge of epidemic diseases, that Professor Huxley is able to say that so far as scarlet fever is concerned, "the facts which I have placed before you must leave the least sanguine without a doubt that the causes of this scourge will one day be as well understood as those of Pebrine are now; and that the long-suffered massacre of our innocents will come to an end." It is thus that Science and Civilization go hand in hand together. We study Nature to subdue her, stoop to humble observation of her ways that we may conquer her; and Science, which is only knowledge of her laws, makes us free of her kingdom."

A NEW ARTIFICIAL LIGHT.

The *Scientific American* of last Saturday says:—"One of the arguments employed in our works on chemistry to prove that the atmosphere is a chemical mixture and a true compound is derived from an experiment upon the solubility of air in water. Roscoe says, in his admirable treatise:

"When air is shaken up with a small quantity of water, some of the air is dissolved by the water; this dissolved air is easily expelled again from the water by boiling, and on analysis this expelled air is found to consist of oxygen and nitrogen in the relative proportions of 1 and 1.87. Had the air been a chemical compound, it would be impossible to decompose it by simply shaking it up with water; the compound would then have dissolved as a whole, and, on examination of the air expelled by boiling, it would have been found to consist of oxygen and nitrogen in the same proportions as in the original air, viz., as 1 to 4. This experiment shows, therefore, that the air is only a mixture, a larger proportion of the oxygen being dissolved than corresponds to that contained in the atmosphere, owing to this gas being *more soluble in water than nitrogen*.'

"It is somewhat remarkable that no practical application of this experiment has been attempted until recently. The principle above enunciated is now applied to the manufacture of oxygen from the air. By compressing atmospheric air into receivers filled with water, more than the usual quantity of oxygen will be dissolved, and the dissolved air can be forced into a second and third receiver, becoming each time more and more rich in oxygen, until an atmosphere is finally obtained that consists of 90 per cent of that gas. Some use for the nitrogen may be invented, but at present it is of little value. It is probable that this method will eventually prove the cheapest for the manufacture of oxygen. Experiments have established the fact that an atmosphere containing 50 per cent of oxygen yields results nearly equal to what can be obtained from pure oxygen. Thus far the chief investigations have been made in this direction of furnishing a new and cheap artificial light. As soon as we can feed an air to our lamps containing 30 or 40 per cent. more than the usual proportion of oxygen contained in the atmosphere, the brilliancy of the light will be greatly increased and it will afford a much healthier light than is now given by our gas. A lamp has been invented in Cologne, called the Phillips Carbo-oxygen lamp, where the oil is some cheap hydrocarbon, the wick of non-combustible material, probably asbestos, and oxygen is supplied from a reservoir by a peculiarly constructed apparatus. The flame is made to assume the form of a star, and any heating of the wick-holder is prevented by the manner in which the oxygen jet is permitted to feed it. It is said that the lamp needs no special attention beyond that of filling it with the patented hydrocarbon liquid. The wick requires no trimming, and explosions are impossible, as the oxygen does not in any way mix with the gases that might be produced by the heat of the combustion. The light of a lamp consuming five and a half cubic feet of gas per hour is equal to 90 or 100 candles, or ten times that of an ordinary gas jet. In diffusive power it would, however, probably not equal a less brilliant light. For lighthouses, fog signals, and photographic purposes, and for studies for the microscope, such a lamp would be of great value. The usefulness of this method of obtaining oxygen would not be confined to the production of light. There are other important applications for that gas, and the moment that we can obtain it cheaply it will enter into metallurgical operations, into compound blow-pipes, into laboratory and pharmaceutical uses, and, in fact, be applied in a thousand ways. It is possible that we may find some other liquid than water that has great solvent power for oxygen with none for nitrogen. The receivers once filled with such a liquid need not be filled a second time, but an indefinite quantity of air could be absorbed and expelled from the same apparatus, and it is possible that this operation could be carried on by clock-work or some other mechanical means. We are manifestly on the eve of the discovery of an easy and cheap method for the manufacture of oxygen for artificial light and other purposes, and the source of the gas appears likely to be the atmosphere."

New Chemical Relations of Silica.—Friedel and Ladenburg recently announced to the Academy certain new organic compounds containing silicon, among which was what they called *silicopropionic acid*, containing in its constitution, with silicon and hydrogen, the organic radical *ethyle*. They say it "much resembles silicic acid, but is easily distinguished by its combustibility, burning like tinder when heated." It is insoluble in water, but readily soluble in warm concentrated potash. It appears to be a feeble acid, analogous to silicic acid, and "is, in fact, the first carburetted silicic acid." The authors say that "it constitutes one term of a series of homologous acids," of which others will be obtainable by like processes. Dumas, in commenting on this paper, threw out the conjecture that as "there are so often found in nature silicious matters, containing traces more or less visible, of organic matter, it would not be surprising that, just as at times natural compound ammonias have been confounded with ordinary ammonia, so compound silicas, in nature, may have been regarded as ordinary silica. In response to this comes a communication from Paul Thenard, of a most striking character, being the announcement of the discovery that certain modifications of the substances of the humic acid group *have the power to dissolve silica in large quantities*. These new silicious solvents are produced by fixing ammonia upon the humic matters, in ways not yet explained, by which the ammonia is not merely combined as a salt, but enters into the molecular constitution. He has thus formed four distinct derivatives of the humic type, which are not alkaline but acid, and he calls them *acides azhumiques*, which we must render into English as *nitro-humic acids*. Their fixity is remarkable, as they do not wholly lose their nitrogen at 1,000 deg. to 1,200 deg. They combine with silica to new acids, *siliconitro-humic acids*, which are instantly dissolved by alkalies, including ammonia, even when very weak, forming salts, from which the siliconitro-humic acids may be recovered in all this integrity. The proportion of silica taken up is in proportion to the amount of nitrogen present, varying from 7.5 to 24 per cent. A new relation is here indicated between silicon and nitrogen. Thenard finds these nitrohumic acids in soils, and attributes the silica always found in solution of the acids of soils to this cause.

Prof. Henry Wurtz, from whose *Chemical Excepta* we take the above, remarks upon it as follows:—"We have demonstrated thus, at once, a theory, not only of new relations of plant decay to plant nutrition, but also of the far broader subject of the transformation and migration of silica throughout all past geological ages, and of the continual, and (as the writer of this abstract has long believed) *sole* agency of life in these, as in the past and present migrations and transformations of carbon."

The friends of Dr. Livingstone continue confident that he is alive and is engaged prosecuting his discoveries in the vast central and watery region on either side of the Equator. He is supposed to be tracing a connection between the waters of the Tanganyika Lake, where he was last heard from, and the south end of Albert Nyanza, where it was expected that Sir Samuel Baker would meet him. The last letter from Dr. Kirk at Zanzibar, dated 29th June, 1870, mentioned that Dr. Livingstone was out of danger from cholera, as it had not visited the town of Unyanyembo, and that stores and supplies had been forwarded to him.

The well-known ancient custom of the Jews to observe the anniversary of their fathers' deaths by a religious service celebrated by ten of their members, was not neglected at the battle of Woerth. A Prussian doctor, a Jew, observing a soldier evidently in search of something, inquired what he needed. "Are you a Jew?" asked the man. Receiving an affirmative reply, "Come with me then," returned the man. "My comrade wishes to observe the day of his father's death, and we are only nine." It is needless to say that the surgeon readily acceded to his pious request.

The census in some of the Western States has worked terrible havoc. The population of Omaha has been reduced from 50,000 to 13,000, that of St. Joseph from 40,000 to 18,000, that of Council Bluffs from 20,000 to 11,000, Leavenworth from 35,000 to 21,000, and Kansas City from 50,000 to 17,000. This is worse than war.

Out of 20,664 pupils enrolled in the Cincinnati public schools, 11,233 are studying German.