(For the Scientific American.)

Electro-Magnetism as a Motive Power.

Eletro-magnetism, fifty years ago, was a mere toy, while at present we can use it to propel massive machinery, and transmit intelligence to the distance of thousands of miles in a few seconds: but it by no means follows that it has arrived at its perfection.

It is the province of art to improve nature, but in this instance art has not even arrived to the perfection that nature has.

Electro-magnetism, at present, is incapable of propelling a ship across the Atlantic economically, whilst nature has living electro-magnetic machines (the bird) that can not only cross it more economically than steam power, but in a much shorter time. (Carrier-pigeons have been known to fly 2,000 miles, and it is supposed without a supply of food.) What a remarkable difference between the construction of the galvanic battery of nature and that of art,—the one constructed of metal and the other of no metallic substance; the one obtains galvanism from the acid and water employed in dissolving the metal, and the other from the respired air. Arterial blood, viewed through the microscope, is found to contain minute red globules, which are found to be composed principally of per oxide of iron; these globules, although constituting only the one-thousandth part, impart the red color to the whole mass. Now the blood is forced by the heart to all parts of the body, where the oxygen parts with iron and combines with the waste carbon of the system; it is returned by the veins to the lungs, and then expelled from the system as carbonic acid. The iron again combines with fresh oxygen, and the process is repeated; in this process the oxygen gives out electricity and heat.

According to Dr. Boynton, about one-fifth of the blood in man is monopolized or consumed by the brain, although that organ is perhaps only the one-thirtieth part of the body. Now this large quantity of blood parts with its electricity to the brain, which serves to store or accumulate electricity for use; or, in other words, the brain is to the body what the Leyden jar is to the electrical machine; from the brain the electricity is conducted by the nerves to the muscles, or electro-magnets of the animal, which produce animal motion.

Now, how different this arrangement of nature to that of art, the one using light, compact, and cheap materials (carbon and air), whilst the other uses those that are heavy, bulky, and expensive, to produce electro-magnetism. The one also uses heavy and bulky machiney, the other light, compact, neat, and yet strong.

It is remarkable, that where we use concentrated and dangerous acids, nature uses an inoffensive, yea, even healthy substance (air) to obtain electricity from: air is always at hand, it requires no previous preparation, and its supply being abundant, requires no vessels to contain it. In our galvanic batteries, the acids required weigh more, and occupy more room, than all the rest of the battery, whereas nature takes no more than is requisite for instant consumption.

It is wonderful and grand to see the extraordinary wisdom displayed in the mechanical construction, chemical composition and action of the bird and other animate bodies, yet we must understand them both before we can think of navigating the air, or even the ocean, by electro-magnetism.

According to Allen and Pepys, a pigeon threw off 96 grains of carbon, in the shape of carbonic acid, in 24 hours—a pigeon will weigh about one pound. Now suppose double the above amount of carbon were consumed by the bird whilst flying, we have 192 grains or 1-30th of a pound of carbon propelling the bird for 24 hours, or rather it is the electricity obtained from the oxygen of the air—that is the power, the carbon serving merely as a base. A pigeon will fly about sixty miles per hour, or 1440 miles per day; here we have a ship that will cross the Atlantic in less than two days. J. F. Mascher.

A Neat Craft.

La Esperanza is the name of a beautiful little schooner of 21½ tons burthen, and drawing only two feet of water when loaded which was expected to sail from New Haven, last week, for Lake Nicaragua, via San Juan. She was built at New Windsor, on the Hudson river, for Samuel B. Crofts, who designs running her on the Lake as a freight and market boat.

Tin Roofs.

Messrs. Editors—It is the custom, in the western section of our country, and also of Canada, not to paint tin roofs, while it is, in our section, the reverse of this—tin roofs being universally painted. It is claimed, in the West and the Canadas, that the roofs last longer without paint than with it, whilst here painting is resorted to to preserve the tin rooting. Now I wish to inquire which party is correct in their reasoning. I incline to favor the Western ideas for two reasons: first, because it will save a considerable expense, and second, because I think it is universally the custom to paint them more from a disposition to follow usage than from a conviction of necessity. I should like to be confirmed in every opinion, or corrected if I am in the wrong, and I resort to you for the purpose, presuming that you are the best qualified parties to impart correct information. H. E. R.

New Britain, Conn., June 7, 1852.

[Both parties are right—it all depends upon the climate. In the interior of our country there is no necessity for painting tin roofs, but near the sea-board there is a positive necessity for so doing. In New York, tin exposed to the rains and mists, without any paint or other covering, soon oxydizes—the iron soon appears through the tin. The reason why this is so, is owing to saline matter being brought from the ocean with our eastern winds. In the Island of Britain, where there is such a moist saline atmosphere, the farmers never feed salt to their cattle; but, at the same time. the farmers there cannot use tin for roofing,—it *rusts* in a few days. In the interior of our country, where the atmosphere is free from saline matter, we have noticed that there was but little use in painting tin roofs. Observation is the only way to acquire correct information about such things. In our city it would be better if tin roofs were not painted for at least six months after they were put on. Tin, when new and handled by the roofers, is greasy, this prevents the paint (unless a great quantity of turpentine be used, which spoils it) from adhering to the tin, and it soon wears off. The exposure, before painting, also serves to *bite* into the tin, and affords a good ground for the more intimate union of the paint with the metal.—Ed.

The Engineers' Strike in England.

The engineers' *strike* in England, has terminated disastrously to the operatives. The employers have completely reduced the spirit of the men, and have compelled all those whose labors they have accepted to subscribe a document renouncing all connection with the Trades' Society. This is just such a result as we predicted. What chance had thousands of workingmen against a few men of great wealth, every one worth as much money as the whole Trades' Society put together. We knew what the result would be; it was a most unwise course of action for the men. We hope it will be a lesson to them and other like minded people for ever.

"The Amalgamated Society of Trades' Unions," in England, have come to a new conclusion, one which they should have come to long ago, as expressed by the following resolution:—

"We believe that 'hostile resistance of labor against capital is not calculated to enhance the condition of the laborer,' and advising that 'all the future operations of the society should be directed to promoting the system of self-employment in associated workshops.'"

While we are opposed to all tyranny, we cannot excuse a reckless want of wisdom in any body of men who have eyes to see, ears to hear, and memories to remember what has been done in other times. An employer has a perfect right to buy labor of any person he choses, and a workman has the same right to sell his to whom he chooses. Any body of men have a perfect right to *strike*—refuse to work—but they have no right to impose restrictions on employers, to which they would not be willing to submit themselves. These are our principles; we profess to know something about these things on both sides of the question.

Explosion of Burning Fluids.

E. N. Horsford, Rumford Professor in Harvard University, has presented his views on some explosions of burning fluids to the "American Academy of Arts and Sciences." The principal case which he discusses is an explosion of a can containing burning fluid, which took place at Salem, Mass., on the 24th of last February. An account of it, with diagrams, is presented by Prof. Horsford, in the Boston Traveller; it seems the can containing this fluid was standing on a shelf, and was corked, but not tightly; no fire had beem employed in the apartment during the morning the explosion took place, until a short time before the accident. The room was an unfinished out apartment; a cast-iron stove was placed near its centre, and between it and the can containing the fluid, there was one pail full of water, and an empty one; the fluid can was six feet from the stove, and three feet above the floor; to all appearance it was well sheltered from the heat. The top of the stove was red-hot when the explosion took place. But what was the cause of its exploding? Prof. Horsford comes to the conclusion that some of the fluid had evaporated from the can, mixed with the atmosphere, and thereby became an explosive mixture in the room, which was ignited by the red-hot plate of the stove, thus causing the explosion. This, to our mind, is a most rational and correct view of the question.

Prof. Horsford has devoted his attention in devising expedients to render the use of our clean burning fluids safe in the hands of the most unskillful, and his efforts have resulted in complete success. Lamps for this purpose will soon be made by him and Dr. Nichols, of Haverhill, which are to obviate all the dangers and allow the free use of such fluids. We have always discountenanced the use of the volatile burning fluids in families where there were children and young females, and we shall continue to do so until we are convinced that there is no danger. We are well aware that when gas was first introduced, a great number of accidents, by explosions, &c., took place, and its use as a dangerous illuminating substance was much opposed, on the ground of its dangers. These dangers have all been surmounted, and we trust it will soon be so with the volatile fluid hydro-carbons—burning fluids—for assuredly they are much cleaner than oil, and afford a more pleasant light.

English Model of the Yacht America.

An English paper says, Mr. Veal, a working shipwright of the Devonport dockyard, has made himself a sailing boat upon the lines supplied by Mr. W. Rundell, also a shipwright in the dockyard, after as nearly as possible the model of the America yacht. It was tried against the picked boats of the port, and it beat them all.

Her hull and her sails were as much like the America as possible. The boats with which she raced carried as much more canvas and when going before the wind got ahead of the America model boat. As soon as it became needful to close haul, she overhauled the whole of them, and won in gallant style. It appeared to surprise many practiced boat-builders that a craft with such limited sails should have beaten their "crack boats," but so it was.

A Telegraph.

Swiss papers state that a machinist in the Canton of Schwyz, has invented a new apparatus for printing by electric telegraph, by which each letter is printed in any required kind of type, by a single closing of the circuit, and the motion of the letter is accomplished by the action of one magnet and one commutator only. The paper which receives the impression from type, moves in regular correspondence with the action of the operator, and if he stops before the sentence is concluded, the paper likewise stops. The work is represented as equal to the best quality of print.

[We have seen the above in a number of our exchanges, without note or comment. They do not seem to know that House's Telegraph prints all its messages in Roman characters, plain as print, and ready to be set up by the compositor.

Sleep.

No person of active mind should try to prevent sleep, which, in such persons, only comes when rest is indispensable to the continuance of health. In fact, sleep once in twenty-four hours is as essential to the existence of mammalia as the momentary respiration of fresh air. The most unfavorable condition for sleep cannot prevent its approach. Coachmen slumber on their coaches, and couriers on their horses, whilst soldiers fall asleep on the field of battle, amidst all the noise of artillery and the tumult of war. During the retreat of Sir John More, several of the British soldiers were reported to have fallen asleep upon the march, and yet they continued walking onward. The most violent passions and excitement of mind cannot preserve even powerful minds from sleep; thus Alexander the Great slept on the field of Arbela, and Napoleon on that of Austerlitz. Even stripes and torture cannot keep off sleep, as crimnals have been known to sleep on the rack. Noises which serve at first to drive away sleep, soon become indispensable to its existence; thus a stage coach stopping to change horses, wakes all the passengers. The proprietor of an iron forge, who slept close to the din of hammers, forges, and blast furnaces, would awake if there was any interruption to them during the night; and a sick miller, who had his mill stopped on that account, passed sleepless nights until the mill resumed its usual noise. Homer, in the Illiad, elegantly represents sleep as overcoming all men, and even the gods, excepting Jupiter alone.

The length of time passed in sleep is not the same for all men: it varies in different individuals and at different ages; but it cannot be determined from the time passed in sleep, relative to the strength or energy of the functions of the body or mind. From six to nine hours is the average proportion, yet the Roman Emperor, Caligula, slept only three hours, Frederick of Prussia and Dr. John Hunter, consumed only four or five hours in repose, while the great Scipio slept during eight. A rich and lazy citizen will slumber from ten to twelve hours daily. It is during infancy that sleep is longest and most profound. Women also sleep longer than men, and young men longer than old. Sleep is driven away during convalescence, after a long sickness, by a long fasting and abuse of coffee. The sleepless nights of old age are almost proverbial. It would appear that carnivorous animals sleep in general longer than the herbivorous, as the superior activity of the muscles and senses of the former seem more especially to require repair.

Suspension Bridge.

The "St. John (N. B.) News," speaking of a suspension bridge, in progress of construction between that town and Carleton, says that the whole credit of the work is due to Americans. Serrell, the constructor, is the American Engineer who built the great Canadian Suspension Bridge. Mr. Reynolds, who originated the idea and collected the subscriptions, is an American. The firm who are erecting the towers, are also Americans.—"So," says the "News," "we shall be indebted to Jonathan for the beginning, making, and finishing, of one of the most spirited and curious undertakings known in America. The bridge will be 600 feet in length—and suspended nearly one hundred feet in the air.

New Enemy to the Pear.

A horticultural friend, yesterday, showed us a number of pear leaves, with a number of small green worms upon them, some so small as to be almost invisible, and the largest three-quarters of an inch in length. They are very ravenous, and some trees have been entirely stripped by them. The whale-oil soap, (about a pound to three gallons of water), kills them instantly. They commence by eating a small circular hole in the leaf, but soon demolish the whole, including the stem. —[Salem (Mass.) Gazette.

A new method of making yeast is to take a large teacupful of split and dried peas, put them in a pint of boiling water, cover them closely to exclude the air, place them by the side of the fire for twenty-four hours, when it should have a fine froth on the top. A table spoonful of the liquor raises one pound of flour.—[Ex.