THE LATE JOHN LAIRD.

One by one the founders of modern engineering science pass away. We chronicled the week before last(page 309 of our current volume) the death of Mr. John Laird, one of the originators and, for many years, the head of one of the largest iron shipbuilding works in the world, and a prominent figure in the industrial arts at a time when iron vessels were merely matters of theory; and we publish herewith an excellent likeness of this well known man. Birkenhead, the scene of the labors and prosperity of the Laird family, lies on the left bank of the estuary of the Mersey, immediately opposite Liverpool, and is renowned for its many important industries and its magnificent inclosed docks, cut out of the solid rock, which there forms a surface stratum of immense thickness. In 1841, William Laird, father of the lately deceased, commenced the shipbuilding and iron works, and lent his aid to establish many of the important steamship lines which have their headquarters in Liverpool and Birkenhead. In the year 1829, John Laird constructed an iron ship, which there is good reason to believe was the first ever built. She was a 60 tun vessel, built for inland navigation; and although many difficulties, owing to the novelty of the task, beset the builders, she was framed and plated very similarly to the largest and best ocean steamships of the present day. In 1834, Mr. Laird built a paddle steamship for the late W. B. Lamar, who recently died in this city; she was called the John Randolph, and the *Practical Magazine* asserts that she was the first iron vessel ever seen on American waters. She was shipped piecemeal from Liverpool, and set up on the Savannah River.

In the limits of a newspaper article, it is hardly possible to detail the development of the great industry of Birkenhead; suffice it to say that the firm of John Laird & Co. have, to this date, possessed one of the largest establishments for the special purpose ever organized. Between the years 1829 and 1873, they turned out 429 steamers, of 229,662 tuns builders' measurement, driven by engines amounting to 39,790 horse power. Half these engines were manufactured by Messrs. Laird & Co., as well as engines to the amount of 25,143 horse power, fitted in vessels constructed by other builders.

Mr. John Laird's administration of these large operations is noticeable in many ways. He was, as early as the year 1839, and previously, urging the British Admiralty to build iron ships only; and his iron steamers of that date became renowned for speed and durability. He built a vessel of 446 tuns burthen, which drew only two feet of water, and he obtained an advantage over many rivals by building, in three weeks, a gunboat for use in the Russian war. The splendid fast steamers plying between Holyhead and Dublin are his work; and, indeed, there is no quarter of the globe where his handiwork is not represented. The building of the notorious Alabama, for a Liverpool firm of merchants who were the financial agents of the South during our late war, and her depredations upon our commerce during the first few months of the rebellion (for which the English Government has already paid over fifteen million dollars for damages to our shipping), have given the Laird establishment great notoriety in this country. The Alabama was built after Mr. John Laird's retirement from business.

The works of this firm cover 20 acres of ground, and have held the chief position in Birkenhead since 1824. In 1831, the population numbered only 2,569; it is now over 70,000. Three thousand skilled artisans are employed by Laird & Co., and, to their credit may it be said, the firm have made many liberal arrangements for the moral and social wellbeing of their employees.

John Laird retired from business in 1861, when Birkenhead became a Parliamentary borough, and was elected member for the town, retaining the seat to the day of his death. Since his withdrawal, the works have been carried on by his three sons.

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SEVERAL years since a spontaneous explosion took place in a rock quarry near Nicholasville, Ky. The Lexington *Gazette* says that recently these explosions have begun again, two very violent ones having occurred, rending the rock in all directions and throwing up a vast amount of *débris*. The people of the neighborhood are very much exercised in reference to these unaccountable proceedings. The explosions are described as so violent that, if one should occur under a house, it would hoist it and its contents like a veritable torpedo.

The Great Suspension Bridge between New York and Brooklyn.

The engineers of the Brooklyn Bridge have prepared plans and specifications of the massive iron saddles upon which the cables are to rest, and bids for their construction will soon be called for. The saddles, four in number, will each have for a foundation a solid plate of iron, 16 feet long, 8 feet wide, and 1½ inches thick. The plates are to be provided with two flanges, which will be imbedded in the solid masonry of the tower. But in order to provide for the contraction and expansion of the enormous mass of metal in the cables, forty-three iron rollers, 3½ inches in diameter, will be inserted in a groove between the saddles and the saddle plates. The saddles will then be enabled to move backward and forward, and accommodate themselves to the strain of the cables, which is liable to differ in intensity according to changes of the temperature. Each saddle will weigh about 25,000 lbs., and will contain at its apex a rounded groove 19½ inches wide, through which the cable will find an exit. Each cable will be composed of more than 6,000 wires, and will sustain nearly 1,000 tuns. The stay cables will bear a portion of the weight, and it is computed that the entire structure between the spans will weigh about 5,000 tuns. It is predicted that the bridge will be completed in four years.

Car Brakes.

A series of experiments were recently made by the Baltimore and Ohio Railroad Company to test an improvement made by Mr. Loughridge in car brakes. The object was to determine in what time and distance a single car could be stopped at high speed in comparison with the old system where the hand brakes are used, which was determined by drawing the coupling pin and separating two cars from the train. The results were that, when the pin was pulled and the brakeman signaled to apply the brakes, the car with the new system was stopped when running at a speed of forty-eight miles an hour within a distance of 550 feet, and within 13⅓ seconds time, while with the other car it required 1,255 feet distance. Several stops were made, which showed great power and a remarkable uniformity of action in the new brake. Mr. Loughridge claims this as the shortest distance in which a car has ever been stopped with hand power, as some two hundred feet were required to fully apply the power with a brakeman, and that with this improvement the effectiveness of the air brake will be proportionately increased.

Mediæval Superstition.

The increased longevity of later times is less owing to improved therapeutics than improved hygiene. Dr. Lyon Playfair says, in a late paper read at Glasgow: When the Egyptian, Greek, and Roman civilizations expired, with their baths and divine maxims about ablutions and purifications, dirt reigned for a thousand years. Not a man or woman in Europe ever took a bath; hence the spotted plagues, the black deaths, the sweating sicknesses, the dancing manias, the mewing manias, and biting manias that ravaged the people, and cut off, in the middle ages, one fourth of the entire population. Religion came to the aid of dirt; the more filthy a saint was, the more saintly he was considered. Some of the hermits never changed their clothes, and only combed their hair once a year. St. Anthony never washed his feet, and St. Thomas à Becket's under garments acquired an additional sanctity from the vermin they contained. Nervous diseases, the result of superstition, were frequent, and often attributed to demons.

The Camacho Electro-Motor.

Several scientific men, at Havana, have been appointed to examine the electro-magnetic engine invented by J. S Camacho, and to report on its advantages for industrial purposes in general, and especially as motive power. So says the *Revista de Telégrafos*. In the Camacho electro-magnet each limb is formed of four hollow concentric iron cylinders, the inner one half an inch in thickness, and the three remaining one quarter inch. The interior diameters of the tubes are, respectively, 2, 3, 4, and 5 inches. Each of them is surrounded with a coil of copper wire, covered with cotton, and is one eighth inch in section, forming, on the three inner tubes, two complete layers with 180 turns, and on the outer tube seven layers with 630 turns.

The copper wire on each tube is coiled in the same direction, passing at its ends across the armature of the magnet, and uniting them, therefore, in the natural order, so as to form a single conductor through which the current from the battery may travel, magnetizing each tube, and endowing them all with magnetism of an equal nature. The length of the limbs of the magnet is 8 inches, the weight 77 lbs., and that of the copper wire 47 lbs. with a total length of 2,600 feet.

Repeated experiments have shown that this magnet requires the current produced by seven bichromate of potassa elements, and its power of attraction at a distance of one twelfth of an inch is more than 1,250 lbs. An electro-magnet of the ordinary construction, of equal exterior diameter and placed in the same conditions, is only able to support 25 lbs., a weight 50 times smaller.

Repeated experiments of physicists, as eminent and well versed in electro-magnetism as De la Rive, have shown that the main difficulty which has opposed the industrial application of the electro-magnetic force has been that hitherto it has proved from 25 to 30 times dearer than that of steam. If, therefore, M. Camacho has succeeded in obtaining electro-magnets so powerful, the following proposition cannot be pronounced too venturesome: "The new electro-magnets offer to industry a source of power much cheaper than animal labor, and capable of immediate application to urban railways. The same power is further destined, at no remote epoch, to replace advantageously that of steam."

The report is signed by D Francisco Clerch, Professor of Physics and Chemistry at the College of Guanabacoa; D. Eu. de Aranlave, Inspector General of Telegraphs for Cuba; D. Antonio de Molina, Engineer in Chief on the staff of the roads, canals, and harbors, and of public works; and D. Alberto de Castro, Civil Engineer.

Red Wall Paper Dangers.

To the dangers due to the arsenic entering into the pigment used in staining green wall paper, must now be added others produced by coralline dye employed in the coloring of red hangings. It appears that the poisonous symptoms (extending to acute eruptions of the body, when under garments thus dyed are worn, and to eye diseases in papered rooms) are owing not directly to the coralline, since recent experiments have proved the substance to be harmless, but to an arsenical mordant used to fix it. This last acts as a poison, both topically upon the skin, through contact with garments, and also by its dust and vapors, disengaged from the stuffs which it colors.

PROFESSOR SCHIMPER has discovered a fossil plant in protogine, a rock hitherto considered as of igneous origin and found in the form of erratic blocks in the sides of Mont Blanc. The plant is of aquatic nature, and hence the aqueous origin of the rock is rendered probable.