

THE LATE REV. PATRICK BELL, LL.D.

The Rev. Patrick Bell, LL.D., minister of Carmyllie, in the Presbytery of Arbroath, the well-known inventor of the reaping machine, died recently, after almost attaining the Scriptural three score years and ten. He had been ailing for the greater part of a twelvemonth, and for the last four months of his life he had been entirely laid aside from ministerial duty. The celebrity attained by Dr. Bell was entirely due to the successful character of the invention with which his name is henceforth to be indissolubly associated in the history of the country. The father of the deceased was a farmer in Forfarshire; and when young Bell was a student, prosecuting his studies for the ministry at St. Andrew's University, in the year 1827, he turned his attention, on his brother's farm, to the practical application of his views on machine reaping, and in the following year the machine was working successfully. It was then almost as perfect a piece of mechanism as the best reaping machine of the present day. Its invention preceded that of the American machines by seven or eight years. At the Dundee meeting of the British Association, in 1867, Dr. Bell gave a very full and graphic account of the history of the invention. Some time after that meeting, a subscription of £1,000 was collected and presented to Dr. Bell, as a recognition of the great value and utility of his invention, and about the same time he was created LL.D. by his *alma mater*. Dr. Bell was an excellent mathematical scholar, and fully studied the application of mathematical science to physics.—*Engineering*.

The White-footed or Deer Mouse.

This species of the *Mus* family has been noted for two characteristics, not confined to it alone, but still rare. One is that it is an active tree-climber, and very frequently makes its nest upon or in trees, sometimes at a considerable distance from the ground; and the other is its mode of transporting its young, which, as usually observed, is by the latter adhering to the teat of the mother, who drags them along in her flight from danger.

In October last I observed a bunch of sticks and twigs in a thorn bush, about thirty inches from the ground, about the size of one's head and rounded on the top, with no appearance of ever having been occupied by a bird. When the ax-man struck the root of the tree, a white-footed mouse (*Mus leucopus*) rushed from the nest with two of her young family, fully half-grown, attached to her. She coursed up and down the limbs, and from one limb to another, dragging her heavy load after her. Occasionally both would drop down on either side of the limb along which she was dragging them. Sometimes when she would reach a lateral branch, the young hanging its whole length below it, she would *yank* the infant with a force truly surprising, which must have been a severe test upon the hold of the little one.

Two observations interested me particularly: First, the young were not adhering to the teat, which has been supposed to be the universal habit of this mouse, but were adhering to the outside of the thighs. In this observation I do not think I could have been mistaken, as I was struck with this peculiarity, and stood within a yard of them, and she stopped in plain view several times in apparent doubt as to which way to go, and once on a limb about an inch in diameter, and with one of the young hanging down on either side, which gave me the best possible chance for an accurate observation. The young, though large enough to have fled much faster than the mother could drag them, made no effort to assist in the flight, but contented themselves with passively hanging on. Second, the young were of a dull blue or lead color, darker than the common house-mouse, and showing no white on the feet, belly or sides, which is always observable in the adult.

My desire to secure them as specimens was overcome by my sympathy for the afflicted mother, and I allowed them to escape. This was done after having once retreated to the nest, and left it again upon a new alarm, when she ran out upon a limb as far as she could, and jumped to the ground, a distance of full four feet, the young still adhering to her.

I did not, as I should have done, examine the internal arrangement of the nest. If she had taken possession of an abandoned bird's nest, she had completed the structure by adding to it till the top presented a full convex form.—*J. D. Cotton in the American Naturalist*.

The Channel Bridge.

The following is a translation of an article in the *Journal Officiel de l'Empire Français*:

"The project of a bridge over the Straits makes each day further progress. The first model was completely finished some days ago, and is perfectly satisfactory. This small model is composed of a single arch, reduced upon an exact scale to the hundredth part of the size of one of those of the great bridge. It presents an absolute rigidity throughout; that is to say, it is not subject to any movement or oscillation; there is, consequently, no vibration calculated to disintegrate the metal.

"There is no more elasticity perceptible under foot than in walking on a pavement, and it can support without any deflection, a weight greater than that of twenty trains proportioned to the same scale, meeting in the middle of the arch. The weight of ten men does not produce a deflection of more than a few millimeters in its whole length, and as soon as it is relieved of its burden, it recovers exactly its first position; indeed, it is not necessary to employ several of the parts prepared to ensure rigidity. This result simplifies the question, and permits considerable economy in the cost.

"A second model of a size double that of the first is on the point of being completed, and if, as everything tends to show,

the result is as favorable, the most skeptical will be unable to entertain the smallest doubt in respect of it.

"In any case, the problem is solved that bridges and viaducts of every size can be constructed in a single arch, without piers, from bank to bank. Already many orders for large and small bridges have been given—among others, a large bridge for a road and railway of a kilometer in length, which will unite St. Malo and St. Servan to Dinan; a foot bridge of a hundred meters over the basin of the lock at Calais; and several others for the departments."

Apparatus for Saving Life at Sea.

A new contrivance for saving life at sea has been made by M. C. J. Laurendeau, of Paris. It is composed of a quantity of thick cork, sufficient to float and sustain a person in the water, and is adapted to the abdomen and a part of the chest; a second supply of thinner cork is placed between the shoulders, and reaches to the nape of the neck. This arrangement is intended to produce perfect equilibrium, the part of the body unfurnished with cork acting as ballast. Should the bather desire to swim under water, the collar is removed, or the buoyant part turned from the side, the principal piece being furnished with nippers for closing the nostrils and a pipe or tube to breathe through, the end of which terminates in a funnel of cork, so as to float on the surface of the water. And, finally, a person may remain, and swim a considerable time under water, by making the principal piece of the apparatus both a means of buoying up the body and an air reservoir, from which the bather expels and draws in air by means of a double tube, the reservoir being divided into two compartments by an elastic partition; but this apparatus is intended only for good swimmers, and it would be necessary to carry ballast.

Editorial Summary.

HERR GROTOWSKY, of Halle, on the Saale, has made known some interesting facts on a new property of hydrocarbon oils which he has discovered. Exposing various kinds of oils in glass flasks to the rays of the sun for a period of three months he found invariably that they absorbed oxygen and converted it into ozone. The air was ozonized even in well corked vessels, the effect being, however, to some degree dependent upon the color of the glass. The respective results were noted after the lapse of three months. American kerosene, from petroleum, which had been exposed to light in white unwrapped glass balloons, had become strongly ozonized so much so that it scarcely burned. The originally bluish white oil had assumed a vivid yellow color, and the specific gravity was found to have increased 0.005. American kerosene which had been kept in the dark for three months did not show any ozone at all, and burned satisfactorily. The oils were exposed from April to July, 1868. Those which had become strongly ozonized had also suffered a distinct change in color, and the corks were bleached as if attacked by chlorine, while the other oils had remained unchanged in these particulars.

THE EFFECT OF CHARCOAL ON FLOWERS.—A horticulturist in England, purchased a rose bush full of promising buds—the flowers, however, were of a faded hue. He covered the earth in the pot about an inch thick with pulverized charcoal, and was surprised, some days afterward, to find the blooms of a fine lively rose color. He repeated the experiment another season with the same result. He then tried the powdered charcoal upon petunias, and found that both the white and violet colored flowers were equally sensitive to its action. It always gave great vigor to the red or violet colors of the flowers, and the white petunias became veined with red or violet tints; the violets became covered with irregular spots of a bluish or almost black tint. Many persons who admired them thought they were choice new varieties from the seed. Yellow flowers appear to be insensible to the influence of charcoal.

THE new Cab Company Act, which passed the Legislature during the last session, is shortly to go into operation. The company have a capital of a quarter of a million, with power to add one hundred and fifty thousand more, and are authorized to run their cabs or hansoms in any street in New York or Brooklyn that the Mayor of each city may direct. The following rates of fare are provided in the act, and a half fare additional may be demanded between midnight and six o'clock in the morning: "For any distance not exceeding one mile, for a single passenger, 30 cents, and for two persons, 40 cents; and at the same rate for greater distances, a fraction of a mile counting always as a mile. For any time not exceeding one hour, for a single passenger, 75 cents; for two persons, \$1; and for any time additional, for each hour, or fractional part of an hour, at the same rate."

CHEAP POSTAGE SYSTEM.—Since the publication on page 815, current volume, of our notice of the abuse of the franking privilege by Hon. John T. Deweese, M. C., of North Carolina, in franking Swetland's circulars, we have had other complaints. It appears from the envelopes before us that Mr. Deweese not only signs his frank, but the superscription appears also to be done in the same hand writing. We could afford to pay a very liberal salary to any "M. C." who is open to do work of that sort. Our yearly postage bills are very large.

DWARF orange trees from China have reached Los Angeles, California, in good condition. "It is curious," says a writer, "to see an orange tree not over two feet high, and filled with blossoms and fruit." An acre of ground would contain over four thousand of such trees, and although each tree would produce not more than a half dozen oranges, yet the yield per

acre would largely overbalance that of standard trees. A lot of bamboo plants, of a variety which grows to a height of thirty feet, and from three to four inches in diameter, have also reached California.

THE Postoffice Department has received a telegram from Promontory Point, stating that the mails have been delivered at that place to the Central Pacific Road, and that the through line has been regularly established. The Butterfield Company were informed that their contract would cease on the junction of the roads. The cost by the Butterfield route for transporting the mails was \$1,100 a mile, and by the railroad \$200 a mile per annum.

WE desire to call the attention of our readers to the advertisement of the Colwells, Shaw & Willard Manufacturing Company, dealers in Patent Lead Encased Block-tin Pipe, published in another column. This pipe brings one of the purest and most harmless of metals into contact with water used for culinary purposes, instead of the poisonous metal-lead. Its merits are attested by a large number of eminent scientific and practical men.

FISH.—William Church, of Seymour, Conn., is engaged in pisciculture, and estimates that his present stock in trade consists of 500 trout, which will weigh from 1½ to 1¾ pounds each; 5,000 which will weigh 1 pound each; 20,000 which will weigh from 8 to 10 ounces, and 100,000 which will weigh from 2 to 4 ounces. In three years' time he thinks he will be able to send to market 200 tons per annum.

Dingler's Journal recommends as a lute for covering the corks of vessels containing benzine or any of the light hydrocarbons or essential oils, a paste made of finely-ground litharge and concentrated glycerin. The mixture is spread over the corks or bungs, and soon hardens. It is insoluble in the said liquids, is not acted upon by them, and is quite inexpensive, as the commonest kind of glycerin can be used.

REPORT ON HEAVY ORDNANCE.—We are indebted to the courtesy of Hon. J. A. Garfield for a copy of the Report of the Joint Committee on Ordnance, presented to the U. S. Senate, February 15, 1869, for which he will please accept thanks. The notice of the subject-matter of this report is reserved for a future occasion.

WE, this week, conclude our series of articles on the manufacture of beet root sugar. They comprise the most copious and reliable information ever published in America on this industry, and may take the place of a hand-book with manufacturers and others who wish to be informed in regard to it.

PAGLIARI, an Italian chemist, has invented a kind of paper with which carbolic acid is so thoroughly incorporated that the paper when used to pack animal substances preserves them in a perfectly fresh state, without salt or any curing whatever.

NEW PUBLICATIONS.

PRINCIPLES AND PRACTICE OF ARCHITECTURE. Comprising Forty-six folio Plates of Plans and Details of Churches, Dwellings, and Stores Constructed by the Authors. Also an Explanation and Illustrations of the French System of Apartment Houses and Dwellings for the Laboring Classes. Together with Copious Text. By Sanford E. Loring, Architect, Chicago, and W. L. B. Jenney, Architect, Chicago, Graduate of the *Ecole Centrale Des Arts et Manufactures*, Paris. Chicago: Cobb, Pritchard & Co. Cleveland: Cobb, Andrews & Co. Philadelphia: Claxton, Remsen & Haffelfinger. Cincinnati: Robert Clarke & Co.

This work, though it contains a large number of artistic designs, as its title sets forth, is by no means devoted to this department to the exclusion of full discussion of the fundamental principles of architecture and other important topics connected with the art. The work is a large quarto, of which nearly one-third is devoted to the review of the history of the most important styles of architecture, truth in art, theories of construction, and a most important chapter on modern French architecture, in which the subjects of apartment houses of Paris and workmen's cottages are elaborately treated. The illustrations are of a most excellent character, and as a specimen of a publication of this kind, the execution is praiseworthy throughout. We have not met with an architectural work more adapted to the wants of building associations than this, and its adaptability to the wants of young architects is unquestionable.

MODERN PRACTICE OF THE ELECTRIC TELEGRAPH. A Hand-Book for Electricians and Operators. By Frank L. Pope. New York: Russell Brothers, Publishers, 28, 30, and 32 Center street.

Mr. Pope, well known as a practical operator and electrician, and formerly connected with the office of the SCIENTIFIC AMERICAN, has given us a novotavo of 128 pages, upon the above subject. His qualifications, both theoretical and practical, peculiarly fit him for work of this kind. He has had a large experience in constructing telegraph lines, and has spent much time in chemical and electrical researches. The book is written with a special regard to the general ignorance which prevails among operators about the theoretical part of their profession. Such knowledge is needed to change their labors from the drudgery of mere mechanical routine, to an intelligent and interesting occupation—one in which the brain may find employment as well as the hand. As a work of reference the book has one serious fault—it lacks an index. This want is, however, partially supplied by a copious table of contents. The book commences with a discussion of the various batteries in use for telegraphic purposes, and the generation of electric currents therefrom, from which starting point the subject is amplified in a plain and practical way through all its ramifications.

THE ECLECTIC, for June, contains a picture of Alexandria II. Articles—The Physical Basis of Life; Fergusson's Tree and Serpent Worship; Other Inhabited Worlds; Genius in Love; A Whist Reminiscence; Professor Tynhall on Sound; The Northmen, Heathen and Christian; The Mystery of the Grange; Lanfrey's Napoleon I.; He Knew he was Right, Chaps xxii., xxiii., and xxiv.; Physical Education; A Night Among Wild Fowl The Recluse of Pulo-Penang; A Lunatic Colony; Alexander II., Emperor of Russia. Poetry. Notes on Books. Art. Science. Varieties. Terms of the Eclectic, \$5.00 per annum. E. R. Pelton, Publisher 103 Fulton street, New York city.

THE ARCHITECTURAL REVIEW AND AMERICAN BUILDERS' JOURNAL for May comes to hand with its usual beautiful illustrations and a rich array of reading matter.