

Mr. H. H. West read a paper on the Riveting of Iron Ships, giving tables for calculating the plate and rivet area for double-riveting, treble-riveting, and quadruple-riveting. He referred to the researches of Sir Edward Reed, the Institution of Mechanical Engineers, and others, but did not mention the modification of treble-riveting proposed some years ago, and lately carried into effect by a firm in Holland. On this system, in the middle row of the three rows of rivets, the rivets are spaced only half the distance apart of the two outer rows, the result being to increase very largely the proportion of strength. Capt. Heathorn described an arrangement called by him a Water-brake, for stopping the way of a ship in cases of collision or otherwise; and finally, Mr. J. E. Liardet described an apparatus for indicating the position of a ship's helm.

On the whole the Institution is to be congratulated on the interest and importance of the papers provided for it, and still more on the vigour and ability with which they were discussed by the very eminent engineers and shipbuilders who thronged the rooms of the Society of Arts for the purpose.

SCIENTIFIC SERIALS

Bulletin de l'Académie R. de Belgique, January 5.—On the existence of a fourth species (*B. borealis*) of the genus Balænoptera in the North Atlantic and Arctic Oceans, by M. Guldberg.—On the action of chlorine on combinations of sulphur, and on organic oxysulphurets, third communication, by M. W. Spring.—Researches on spermatogenesis in the Selacians (*Scyllium catulus*, *Sc. canicula*, *Raja clavata*), the salamander and mammals, by Prof. A. Swaen.—Essays on the political history of the last three centuries, by M. Van Praet.—Biographical notice of the painter Michael Van Cocxyen of Mechlin, by M. Castan.

Atti della R. Accademia dei Lincei, January 20.—Letter from King Humbert announcing an additional annual grant of 400*l.* for the promotion of biological studies, to be distributed in prizes in any way the Academy may think fit.—Some philological remarks on the 104th Psalm, by Guidi Ignazio.—Notice of an unpublished work of Prince Federico Cesi, entitled "De Laserpitio et Laserpitii pluvia," in the library of the Botanic Institute at Padua, by Prof. A. Favaro.—Note on the antiquities discovered at Ventimiglia, Montefiascone, Naples, Pompeii, and other parts of Italy during the month of December 1883, by S. Fiorelli.

February 3 and 4.—Notice of some unpublished writings of Galileo Galilei in the National Library of Florence, by Prof. Favaro.—Report on Prof. Bellonci's work "On the Segmentation of the Egg of the Axolotl," by S. Trinchese.—Report on Dr. G. Frattini's work "On Some Propositions in the Theory of Substitutions," by S. Battaglini.—Report on Dr. L. Macchiati's work on the chemical nature of chlorophyll, by S. Cannizzaro.—Observations of the solar spots and faculae made at the Observatory of the Collegio Romano during the year 1883, by Pietro Tacchini.—On the temperature corresponding to the Glacial period, third note, by Pietro Blaserna.—On the extraordinary crepuscular phenomena observed during the last few months, by Lorenzo Respighi.—Contributions to the study of the carboxylic acid α , by G. L. Ciamician and Paolo Silber.—Remarks on the Veronese Chelonian (*Protosphargis veronensis*) discovered in 1852 in the Upper Chalk near St. Anna di Alfaedo in Valpolicella, by Giovanni Capellini.—Geological observations on the islands of the Tuscan Archipelago, by B. Lotti.—Reports on the competition for the Royal Prizes for Physics, History, and Geography for the year 1882, by Signors Cantoni and Villari.—Reports on the Ministerial prizes for the Philosophical, Social, and Natural Sciences for the year 1883, by Signors Bonatelli and Trinchese.

February 17.—Obituary notices of the late Pietro Canal and Edoardo Laboulaye, Members of the Academy, by the President.—On the practice of burying human bones stripped of the flesh in Neolithic times, by Luigi Pigorini.—Note on the antiquities discovered at Felonica, Este, Imola, and in other parts of Italy during the month of January 1884.—Remarks on some codices in the Angelica Library connected with patristic theology, by Enrico Narducci.—Note on the parabolic orbit of the comet (ϵ) discovered by Hartwig at Strasburg on August 24, 1879, by E. Millosevich.—On a remarkable disposition of the isogonic lines of terrestrial magnetism observed in the eastern districts of the Valley of the Po (two illustrations), by Ciro Chistoni.

Rivista Scientifico-Industriale, February 15 and 29.—Description of a new apparatus for the measurement of electro-motor forces (four illustrations), by E. Reynier.—Mathematical demonstration and value of the angle of least deviation described by a ray of light in its passage through a prism (one illustration), by Giuseppe Vanni.—Practical determination of the metallic resistance and chemical reaction of an electrolytic circuit, by Eugenio Marchese.—On the causes of the remarkable after-glow witnessed in Italy and elsewhere in 1883-84, by Prof. Carlo Marangoni. The author compares these phenomena with others of an analogous character observed in various parts of Europe in the year 1869. On several grounds he infers that the pink and red glows could not have been produced by moisture disseminated in the atmosphere in the solid, liquid, or gaseous state. He concludes that they are due to the presence of dust or minute particles of sand, which absorb the coloured rays in the central region of the solar spectrum while transmitting the extreme colours—that is, red and violet. The paper, which is to be continued, offers no suggestion as to the possible origin of the particles of dust to which the phenomena are attributed.—Note on the extinct and living mollusks of the Gardone district, by Prof. Strobel.—On the fossil insects of the Carboniferous schists of Commeny, by S. Brongniart.—Note on the limits of diatomaceous vegetation in marine basins, by Count A. F. Castracane.

Rendiconti del Reale Istituto Lombardo, February 21.—Biographical notice of Carlo Tenca and his times, by Prof. Giovanni Cantoni.—Some reflections on the results of the recent examinations in the Italian language and literature in the higher schools of the Peninsula, by Prof. C. Baravalle.—Fresh researches on the oxidation of sulphur, with some remarks on the oxidising power of the so-called atomic oxygen and of ozone, by Prof. E. Pollacci.—On some cases of subcutaneous nervous affections caused by the presence of *Oscyuris*, *Tænia*, *Solium*, and other parasites, by Prof. A. Scarenzio.—On the relations between the malady known as "bronze skin," and the changes in the supraprenal blood capsules, by Prof. G. Sangalli.—Meteorological observations made in the Brera Observatory, Milan, during the month of February 1884.

SOCIETIES AND ACADEMIES

LONDON

Royal Society, March 27.—"On the Electro-chemical Equivalent of Silver, and on the Absolute Electromotive Force of Clark Cells." By Lord Rayleigh, D.C.L., F.R.S.

The investigations upon this subject which have been carried on by Mrs. Sidgwick and myself during the last year and a half, though not yet quite finished, are so far advanced that no doubt remains as to the general character of the results; and as these results have application in the daily work of practical electricians, it is thought desirable to communicate them without further delay.

The currents are measured by balancing the attraction and repulsion of coaxial coils against known weights, as described before the British Association in 1882, a method which has fully answered the favourable expectations then expressed. To what was said on that occasion it will be sufficient for the present to add that the readings are taken by reversal of the current in the fixed coils, and the difference of weights thus found (about 1 gm.) represents the double force of attraction free from errors depending upon the connections of the suspended coil, and other sources of disturbance.

The difficulties which have been experienced, and which have been the cause of so much delay, have related entirely to the behaviour of the silver voltmeters, of which never less than two, and sometimes as many as five, have been included in the circuit of the measured current. In order to render the deposit more compact, and thus to diminish the danger of loss in the subsequent manipulations, acetate of silver was added in the earlier experiments to the standard solution of nitrate. Experience, however, has shown that the principal risk is not in the loss of metal, but in the obstinate retention of salt within the fine pores of the deposit, leading to an over-estimate of the amount. When the texture is very compact, this danger increases, and deposits from a solution containing acetate are often decidedly too heavy, even after the most careful and protracted washings. On heating to low redness a portion, at any rate, of the retained salt is decomposed NO_2 is driven off, and a loss of