necked Stilt Plover (*Himantopus nigricollis*) from South America, purchased; three Common Badgers (*Meles taxus*) born in the Gardens.

## THE PARIS ACADEMY PRIZES

LAST week the Paris Academy held its annual public meeting, when the prizes for 1878 were awarded. According to old custom, M. Fizeau, the president of last year, was in the chair. He remarked on the unprecedentedly large number of prizes that were not awarded, either because there was no competition or because there were no competitors of sufficient merit. On this account several of the most important prizes have not been awarded this year, and it seems to be the common opinion that some of the problems proposed are much too difficult. M. Dumas read an *éloge* on M. Balard, the discoverer of bromine, and M. Bertrand did the same for Leverrier. M. Bertrand made no allusion to the part taken by Leverrier in the public affairs of his time, and made but slight allusion to his organisation of the Meteorological Service, and that almost as if it were not a thing quite worthy of encomium. M. Bertrand's address does not seem to have given universal satisfaction, and several of the audience on leaving the hall were heard to say: "Quant à l'éloge de Leverrier il est encore à faire." The following are the principal prizes awarded at the meeting:—The Extraordinary Prize of 6,000 francs for the greatest prgress in naval construction, to M. Perroy and Lieut. Bailles; the Poncelet Prize in Mechanics to M. Maurice Lévy; the Montyon Prize of 1,000 francs, in Mechanics, to Mr. George H. Corliss, for his well-known engines; the Plumey Prize to Capt. Vallessie, for his differential counter to regulate the progress of steamships. In Astronomy the Lalande Prize was awarded to M. Stanislas Meunier, for his researches on meteorites; the Valz Prize to Dr. Julius Schmidt, for his lunar charts. In Physics the Bordin Prize was awarded to M. Reynard for his researches in connection with Ampère's law. In Chemistry the Jecker Prize was awarded to M. Reboul, specially for his memoir on the isomers in the propylene series. In Botany the Barbier Prize was given to M. Ch. Tauret, and encouragements of 500 francs each to M. Cauvet and M. E. Heckel; the Desmazières Prize to Dr. Bornet; the Shore Prize to Prof. Ardissone for his "Floridee Italiche;" in Anatomy and Zoology the Serres Prize was awarded to Prof. Alexander Agassiz, for his various embryological and other investigations; and the Montyon Prize in Physiology to M. Charles Rechet, for his researches on gastric juice. The Tremont Prize was given to M. Marcel Deprez for his application of electricity to the solution of various problems in mechanics; the Gegner Prize to M. Gaugain; the Delalande Guérineau Prize to M. Savorgnan de Brazza, for his exploration of the Ogové River; and the Prize founded by Mdme. de Laplace to be awarded to the pupil who leaves the Polytechnic School with the highest honours, to M. de Béchevel.

## UNIVERSITY AND EDUCATIONAL INTELLIGENCE

M. FERRY, the French Minister of Public Instruction, has presented a project for the reorganisation of the Superior Council of Universities. According to the proposals of the minister, which are sure to be adopted by the Assembly, the bishops and other religious members are to be excluded, and the Council exclusively composed of persons belonging to the teaching profession. Moreover, it is proposed that all degrees be henceforth granted by the State, and only to those who have taken the curriculum of a recognised university.

THE examiners for the Burdett-Coutts' Scholarship (Oxford) have awarded it to Mr. Algernon Philips Thomas, B.A., Scholar of Balliol College; and they consider Mr. Henry Nicholas Bidley, B.A., of Exeter College, worthy of honourable mention.

## SCIENTIFIC SERIALS

*Bulletin de l'Académie Royale de Belgique*, No. 12, 1878.—In this number is a paper by M. van Beneden, giving a historical sketch of whale-fishing and of the first Arctic expeditions.—A lecture by M. Houzeau, the president, has for its subject certain enigmatical phenomena of astronomy.—M. van Rysselberghe describes a parabolic regulator, rigorously isochronous, and the velocity of which can be varied at will. Regarding it, M. Folie reports that it has too many articulations and movable rings for common use, and it hardly realises ideal perfection for physical and astronomical apparatus.—M. Malaise announces the discovery of a mineral species new for Belgium, viz., arsenopyrite or mispickel, and M. Monier describes a hydrophane opal and hydrated transparent silica, obtained by action of oxalic acid on alkaline silicates.—There are also several mathematical papers and reports on prize competitions (subjects chiefly botanical).

*Reale Istituto Lombardo di Scienze e Lettere*. Rendiconti. Vol. xii. fasc. ii.—We note the following papers in this number:—Considerations on a letter of Tyndall's regarding heterogeny, by Prof. Giovanni.—On the causes of asphyxia and the agglutination of the blood corpuscles in diphtheria, by S. Trevison.—The Sanitary Office of the German Empire, by Dr. Zucchi.—Studies on milk (continued), by Drs. Pirotta and Riboni.—On cortical psycho-sensory centres, by Professors Luciani and Tamburini.

## SOCIETIES AND ACADEMIES

### LONDON

**Mathematical Society**, March 13.—C. W. Merrifield, F.R.S., president, in the chair.—Mr. J. D. H. Dickson was admitted, Mr. R. Hargreaves and Prof. W. E. Story were elected, and Mr. Donald McAlister was proposed for election into the Society.—Prof. Cayley, F.R.S., spoke briefly but in high praise of the late Prof. Clifford's work as a mathematician, instancing more particularly his papers "On the Canonical Form and Dissection of a Riemann's Surface," "On Mr. Spottiswoode's Contact-Problems," and "The Classification of Loci."—The chairman, the Rev. A. Freeman, and Dr. Hirst, F.R.S., added a few remarks on the loss the Society and the mathematical world generally had sustained, and expressed the hope that steps would be taken to secure the publication, if desirable, of any mathematical papers Prof. Clifford might have left.—Dr. Hirst made a statement respecting the "De Morgan Memorial" Medal to be presented to the Society to be awarded in such manner as the council shall hereafter determine; it appeared that the bust and die for the medal had been executed by Mr. Woolner, and that after all claims had been met there would still be a small sum required to make up the requisite total for the purpose contemplated. The late Prof. De Morgan was the first president of the Society and always took a warm interest in its advancement. It was resolved that a subscription list should be opened in order that old pupils and members of the Society might have an opportunity of aiding in the above design. Subscriptions for this special purpose may be sent to Mr. Tucker (Hon. Sec., University College School, W.C.), or to Mr. Alfred Wills, Q.C., 12, King's Bench Walk, E.C., the Hon. Sec. to the general fund. Copies of the medal were exhibited (Profile with dates of birth and death, on the reverse, Pascal's hexagram, surrounded by the "Zodiac of Syllogisms," and the title President of the London Mathematical Society).—The following communications were made:—On differential equations, total and partial, and on a new soluble class of the first and an exceptional case of the second, by Sir J. Cockle, F.R.S.—Discussion of two double series arising from the number of terms in determinants of certain forms, by Mr. J. D. H. Dickson.—Two geometrical notes relating to surfaces of the second order, by Prof. H. J. S. Smith, F.R.S.

**Physical Society**, March 8.—Prof. W. G. Adams in the chair.—Dr. Hurst and Mr. Jacob were elected Members.—Prof. Ayrton brought forward a new theory of terrestrial magnetism originated by himself and Prof. Perry of the Imperial Engineering College, Japan. It is well known that metal cages act as screens against induction in the case of static electricity or electricity at rest, and hence Clerk Maxwell, at the British Association meeting for 1876, suggested that no earth connection was necessary for lightning conductors, since a cage would be sufficient. But dynamic electricity is different from static in this respect, and Professors Ayrton and Perry found that even a thick block of copper will not screen a coil of wire from the induction of a *current* flowing in a neighbouring one. Some experiments of Dr. Muirhead, not yet published, would seem to favour the view that a current is a series of intermittent changes of potential, and that the inductive effect was due to a difference in the epochs of the currents in the two coils. It was found by Helmholtz that a quantity of static electricity in mechanical

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motion performs work. Conversely Mr. Crookes finds that the stream of molecules from a − pole *in vacuo* is electrified, and may be deflected by a magnet. It is upon that fact that Professors Ayrton and Perry have based their theory, which is easily explained by supposing the earth to be an isolated sphere with a static charge residing on its surface. Then, since each electrified particle at the surface will be moving relatively to a point in the interior, it follows that the interior must be magnetic. The theory is independent of the substance of the interior; but in order to simplify the working the authors treated the case of a solid iron ball, and curiously enough arrived at the result expressed by Biot's law for the distribution of magnetism on the surface of the earth—

$$I^2 = M\sqrt{1 + 3\cos^2\theta},$$

and similarly they found that if the earth were electrified to the potential of $10^8$ volts, relatively to interplanetary space, its magnetisation would be as it is. If the earth were alone in the universe, then, by this theory, it would have its own magnetic state by virtue of its electric charge and axial rotation. If other bodies in the universe, however, had their magnetic states too, these would influence the earth's, and hence we should have terrestrial tides and storms of magnetic force, such as are known to exist, as, for instance, when changes take place in the sun's atmosphere by approach of planets or other causes. Lastly, the iron in the interior of the earth may give it a certain amount of coercitive force, but the theory does not rest on this.—Dr. J. Hopkinson then read an account of some experiments made with the quadrant electrometer, which showed that Clerk Maxwell's formula for the sensibility of the electrometer—

$$(A - B)\left(C - \frac{A + B}{2}\right),$$

where $A$ and $B$ are the potentials of the two pairs of quadrants, and $C$ the potential of the needle, only holds good when $C$ (the charge of the jar or needle) is less than 200 Daniell elements. Above that a different law appears to hold. Dr. Hopkinson also remarked that any degree of low sensibility down to zero could be got from the electrometer by connecting a condenser to each pair of quadrants and adjusting their capacities.—Mr. F. D. Brown described his apparatus for maintaining constant temperatures and pressures. A constant temperature can be obtained if the pressure can be kept constant. The vessel in which the constant pressure is desired communicates with an air-pump by a pipe in which a movable tap or valve is placed. By opening or closing this tap the pressure is regulated. This is effected by an electric clutch arrangement. A mercury anemometer sends a positive or negative current from a battery through the clutch according as the pressure is too high or low, and this current actuates the clutch to close or open the valve. The clutch consists of an axle driven by a turbine to get power to work the valve, and the current, by means of electromagnetism, connects the tap to the axle, which then opens or closes it as the case may be. In this way a pressure varying no more than one-fifth millimetre each way can be obtained.

Linnean Society, March 6.—William Carruthers, F.R.S., vice-president, in the chair.—Mr. Thos. Christie exhibited and made remarks on a series of specimens illustrating the little-known and remarkable Australian Pituri plant; also the *os sepia* of a rare Australian cuttle-fish, obtained by Dr. Bancroft.—Mr. R. Irwin Lynch showed a growing example from Kew and dried leaves of *Xanthosoma appendiculatum*, bearing pouch-like excrescences from the midrib of the leaves.—The Vice-President announced from the chair an alteration in the Bye-laws, Chap. XIII., proposed by the Council.—A letter was read from a correspondent referring to the increased production of beet-root sugar by careful artificial selection of the beet. The saccharine produce of sugar-cane, on the contrary, remains stationary, if not retrograde, and its continual multiplication from stolons some regard as giving rise to various diseases. Crossing and selection are now suggested as worthy of a trial in the interest of commercial results.—A short paper on Entozoic Florideæ growing within living Bryozoa and Sponges, by Dr. P. F. Reinsch, was read, and Mr. A. W. Waters exhibited in connection therewith, under the microscope, specimens of Polyzoa containing parasitic algæ.—In a note on the fruiting of *Wistaria sinensis* in Europe, by Mr. W. T. Thiselton Dyer, the author avers from his own and others' observations that plants trained on a garden wall at Glyon, east end of the Lake of Geneva, yield abundance of brown tomentose pods annually. Near the town of Geneva, however, fruiting is of rarer occurrence, but again more frequent at Lyons and the Rhone valley. Fruiting, he suggests, may be a question of temperature and not of nutrition, dependent on presence or absence of support to the stem and branches. From the above and other data, Mr. Dyer fails to see the evidence of the antagonism of the vegetative and reproductive forces, as asserted to be the governing law, according to Mr. Thos. Meehan's experiments, and lately quoted by the Rev. G. Henslow. If such barrenness were the case with its scandent habit, then *Wistaria sinensis* would probably already be extinct.—The Secretary read a paper by Mr. Edward J. Miers, on the classification of the Maioid crustacea or Oxyrhyncha. The Maioid crabs have been placed by nearly all carcinologists at the head of the Brachyura, from the high degree evinced in their sensory organs and nervous system, and the group, moreover, is interesting on account of the variety of types. Though closely related to the Oxystomata, the Oxyrhyncha differ from them in their triangular buccal cavity and position of afferent branchial channel; but Mesorhœa approximates on the part of the Parthenopidæ to the Oxystomatous type. From the Cancroid crabs (Cyclometopa) typical Maiidæ are distinguished by longitudinal antennules and position of basal antennule joint, the Parthenopidæ occupying an intermediate place between the rest of the Oxyrhyncha and certain Cancroidea. The author reviews the various classifications, and then gives a new synoptical arrangement founded on certain anatomical configurations, &c., of their buccal cavity, situation of afferent and efferent canals, antennules, genital appendages, &c. He divides the group into 4 families, 12 sub-families, 106 genera, and 14 sub-genera, giving short diagnoses of each.—Prof. J. Reay Greene, Dr. P. H. Stokoe, Mr. R. Johnston (of Tasmania), Mr. B. S. Williams, and Prof. J. Wood Mason, were balloted for and elected Fellows of the Society.

Entomological Society, March 5.—J. W. Dunning, vice-president, in the chair.—The chairman referred to the great loss sustained by the Society in the death of Mr. F. Smith, of the British Museum.—Mr. C. Brogniart, of Paris, was elected a Foreign Member and Mr. J. T. Harris, of Burton-on-Trent, a Subscriber to the Society.—Sir Sydney Saunders exhibited a series of bees belonging to the genus *Halticus*, from Greece, containing several remarkable new forms. The following papers were communicated:—On some new species of British hymenoptera, by Mr. Peter Cameron, and descriptions of some new species of coleoptera from New Zealand, by Dr. Sharp.

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