

ing for some time. These hybrids showed markings much more like the markings of the Somali zebra than of their Burchell sire; they seemed to be a case of reversion to a very remote ancestor.

PARIS.

Academy of Sciences, December 12.—M. Wolf in the chair.—Physical study of the elasticity acquired by muscular tissue in a state of physiological work, by M. A. Chauveau. The experiments cited were all carried out upon the flexor muscles of the fore arm of man, and were so arranged as to eliminate the disturbing influence of the weight of the limb. The elongations in the length of the muscle produced by a given increase of load are compared with the elongations which would be produced in inert substances, and the conclusion is drawn that the law obeyed by the muscle is given by $e = \beta(1 + r)$, where e is the increase or decrease of the force of elasticity which is maintained in a muscle put in statical contraction, β is the charge sustained, and r the muscular contraction.—Influence of metallic armatures upon the properties of mortars, by M. Considère. The use of iron or steel for the interior armature of mortars, although opposed by military engineers, on account of the results of tests made by tension only, is justified by the results of the experiments given.—Observations of the Brooks Comet (October 1898), made at the Observatory of Algiers with the 31.8 cm. equatorial, by MM. Rambaud and Sy.—Observations of the planet DQ (Witt) and the Perrine-Chofardet and Chase comets, made at the Observatory of Toulouse with the Brunner equatorial, by M. Rossard.—Observations, made at Athens, of the Leonid and Bielid swarms, by M. D. Eginitis.—On the examination of the singularities of a function defined by a Taylor's series, by M. Émile Borel.—On systems of partial differential equations reducible to ordinary differential equations, by M. Jules Beudon.—On the determination of the group of numerical equations, by M. Edmond Maillat.—On lines composed of rectilinear parts, by M. D. Gravé.—On the practical synchronising of regulators, by M. L. Lecornu.—On the ratio of the two specific heats of gases, by M. Louis Boltzmann. Remarks on a paper on the same subject by M. Leduc, with especial reference to the ratio found for the new atmospheric gases. The author arrives at the conclusions that the molecule of a perfect gas for which $k = 1\frac{2}{3}$ ought to behave in molecular concussions as a rigid sphere, a condition which is probably only possible for monatomic gases: in a gas for which $k = 1\frac{1}{2}$, over an extended range of temperature, the molecule behaves like two spheres rigidly joined together, a case probable for diatomic gases only. At high temperatures, even perfect gases ought to show a diminution of k . For polyatomic gases this would be evident at ordinary temperatures.—On a curious phenomenon of adherence of metallic filings under the action of the electric current, by M. Thomas Tommasina.—On the arc with alternating currents, by M. A. Blondel.—On the transformation of the carbonate of orthocresol into a homologue of the phthaléin of orthocresol, by M. P. Cazeneuve. The phthaléin is produced by the action of soda lime upon the carbonate.—On the mixed phenyl-ethyl phosphates, by M. Albert Morel.—Chlorination of benzene in presence of aluminium chloride, by MM. A. Mouneyrat and Ch. Pouret. If $AlCl_3$ is present in the proportion of 30 gr. to 1000 gr. of benzene, the latter absorbs a rapid current of chlorine completely at 50° C. Fractional distillation of the product gave 760 gr. of pure C_6H_5Cl , together with 450 gr. of dichlorobenzenes. The latter can be obtained readily in quantity by similarly chlorinating monochlorobenzene, the para compound predominating.—Action of oxidising agents upon some nitrogen compounds, by M. Cehsner de Coninck. A study of the reaction between chromic acid and potassium bichromate and numerous nitrogen compounds, including hydroxylamine, hydrazines, ureas, and amides.—Action of the bacillus *Coli communis* and the Eberth bacillus upon nitrates, by M. L. Grimbert. The nitrogen evolved by the action of these bacilli upon a nitrated medium, is always at least double that corresponding to the nitrate taken; hence the nitrogen evolved cannot arise exclusively from the nitrates, but must come in part from the amido-compounds always present in the culture.—The assimilation of nitric nitrogen and of ammoniacal nitrogen by the higher plants, by M. Mazé. Details of experiments are given which confirm the conclusions of M. Müntz, that ammonia, as such, can be absorbed and assimilated by plants.—On the natural dissemination of wine yeasts, by M. Léon Boutroux. Remarks on a paper by M. J. A. Cordier. In opposition to the latter, the author holds that

the theory of dissemination by insects is more in accord with facts than the theory of air dissemination.—The juice of fungi as a vaccine against snake poison, by M. C. Phisalix.—The endomorphic modifications of the gabbro of Pallet (Loire-Inférieure), by M. A. Lacroix.—On the part played by subterranean deposition in the constitution of the soil of a portion of the department of Orne, by M. Stanislas Meunier.

BOOKS and SERIALS RECEIVED.

BOOKS.—The Gold-Fields of Australasia: K. Schmeisser and K. Vogel-sang, translated by Prof. H. Louis (Macmillan).—The Micro-organism of Faulty Rum: V. H. and L. J. Veley (Frowde).—Twenty-seventh Annual Report of the Local Government Board: Supplement containing the Report of the Medical Officer for 1897-98 (London).—Annuaire de l'Observatoire Municipal de Paris, 1899 (Paris, Gauthier-Villars).—Les Recettes du Distillateur: E. Fierz (Paris, Gauthier-Villars).—Ostwald's Klassiker der Exakten Wissenschaften, Nr. 97 to 100 (Leipzig, Engelmann).—Congrès National d'Hygiène et de Climatologie Médicale de la Belgique et de Congo, première partie. Belgique (Bruxelles, Hayez).—Recent Advances in Astronomy: Dr. A. H. Fison (Blackie).—University College, London, Calendar for Session 1898-9 (Taylor).

SERIALS.—Engineering Magazine, December (222 Strand).—Bulletin de l'Académie Royale des Sciences, &c., de Belgique, 1898, Nos. 9 and 10 (Bruxelles).—Observatory, December, and Companion (Taylor).—National Geographic Magazine, November (Washington).—Notes from the Leyden Museum, April and January (Leiden).—Atlantic Monthly, December (Gay).—Journal of the Anthropological Institute, August and November (Paul).—Journal of the Marine Biological Association, November (Plymouth).—An Account of the Crustacea of Norway, Vol. 2, Parts xi, xii. (Bergen).—American Journal of Science December (New Haven).—Morphologisches Jahrbuch, 26 Band, 3 and 4 Heft (Leipzig).—Quarterly Journal of Microscopical Science, November (Churchill).—Memoirs and Proceedings of the Manchester Literary and Philosophical Society, Vol. 42, Part 5 (Manchester).

CONTENTS.

	PAGE
Gegenbaur's Comparative Anatomy of the Vertebrata. By Dr. H. Gadow, F.R.S.	169
Elementary Quantitative Analysis. By W. A. S.	172
Our Book Shelf:—	
"The Illustrated Annual of Microscopy."—J. E. B.	173
Bartlett: "Wild Animals in Captivity."—R. L.	173
Kearton: "Wild Life at Home. How to Study and Photograph it"	174
Houston: "A Pocket Dictionary of Electrical Words, Terms and Phrases"	174
Ghersi: "Ricettario Industriale"	174
Sydow: "Deutscher Botaniker-Kalender für 1899"	174
Letters to the Editor:—	
The Anthropological Expedition to Torres Straits.—Prof. A. C. Haddon	174
Transference of Heat in Cooled Metals.—Carl Kinsley	174
Where do we stand in Brückner's Weather Cycle? (With Diagram.)—Alex. B. MacDowall	175
Soakage into Glazed Porcelain.—F. G.	175
The Twelfth Movement of the Earth.—Prof. J. P. O'Reilly	176
The Geminid Meteors.—W. E. Besley	176
Slug following a Closed Trail.—Vincent Daniel	177
Animals Feeding on Poisonous Plants as Food.—Chas. A. Silberrad	177
The Fumigation of Trees. (Illustrated.) By W. F. K.	177
Curiosities of Orchid Breeding. By C. C. Hurst	178
The Meetings of the British and French Associations in 1899	181
Notes	181
Our Astronomical Column:—	
A Total Eclipse of the Moon	185
Comet Chase	185
Comets ζ 1898 and 1881 IV.	185
Ephemeris of Planet 1898 DQ	186
The Companion to the Observatory for 1899	186
The Solar Disc during 1897	186
The Melbourne Observatory	186
The Relation of the Toxin and Anti-Toxin of Snake Venom. By W. D. H.	186
Remarkable Effect of the Indian Earthquake of June 12, 1897. (Illustrated.)	187
British Association. Conference of the Delegates of the Corresponding Societies	187
University and Educational Intelligence	188
Scientific Serials	189
Societies and Academies	190
Books and Serials Received	192