science, and horticulture. Among the operations of these agricultural experiment stations are "fertilizer control," or the analyses of manures, the analyses of fodder and feeding-stuffs drainage experiments, feeding experiments with farm animals, observations on milk, the determination of injurious insects, with remedies against their attacks, fruit culture experiments, drinking-water analyses, ensilage experiments, meteorology, seed-testing, analyses of soils and rocks, the culture of various plants for fodder and corn, with other useful work.

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, August 26.—M. Des Cloizeaux, President, in the chair.—On the molecular tactics of the artificial macle of Iceland spar produced by Baumhauer by means of a knife, by Sir William Thomson. The substance of this paper has already been communicated to the Royal Society of Edinburgh, and will shortly be published, under the title of "Molecular Tactics of Crystals," in the Proceedings of the Society. The author also contributes a paper on the equilibrium of atoms, and the elasticity of solids in Boscovich's theory of matter.—Note on the orbits of shooting-stars, and on stationary radiant points, by M. F. Tisserand. A calculation of the elements (mostly parabolic) of their several orbits leads to the inference that the meteoric showers encountered by the earth at different times of the year do not all emanate from the same radiating centre, but belong to different systems proceeding from quite independent radiant points. A series of essays based on the assumption that the orbits are not parabolic, but elliptic, lead to the same conclusion.—On the relations of atmospheric nitrogen to vegetable soil, by M. Th. Schlœsing. This is a reply to M. Berthelot's recent strictures on the author's negative results. These results are here maintained, and M. Schlœsing again argues on fresh grounds that there is no fixation of nitrogen by vegetable humus except through the actual process of vegetation.—Pathogenic properties of the microbes present in malignant tumours, by M. Verneuil. The author still adheres to the opinion already enunciated in 1883, that these parasites have nothing to do with the initial stage of boils, ulcers, cancer, and the like. At the same time he does not regard their presence as a matter of indifference, but admits that in certain cases they may themselves possess special pathogenic properties, in virtue of which they act on the system like septic poisons.—On the progress of the zoological station at Roscoff, by M. de Lacaze-Duthiers. The author speaks in satisfactory terms of the present condition of this station, and of the complementary establishment at Banyuls, which have now been placed in connection with the Sorbonne. The electric light, introduced at Roscoff by the aid of private munificence, is now in perfect working order.—The Eiffel Tower struck by lightning, by M. Mascart. A correct account is given of this occurrence, which took place on August 19, and exaggerated reports of which appeared in the daily papers. The conductor was struck, with the normal results, showing perfect communication with earth, and consequently complete safety of the structure from any danger on this score.—Observations with the pendulum effected in Russia, by General Steibnitski. The author reports that the Russian Imperial Geographical Society is now in possession of three Repsold pendulums, with which the latitude and longitude of Karmakul in Novaya Zemlya and Archangel, the two northernmost stations in European Russia, have been accurately determined.—Occultation of Jupiter by the moon, August 7, 1889, by M. Ch. André. The results are given of the three observations taken at the Observatory of Lyons by MM. André, Le Cadet, and Marchand. None of the satellites disappeared instantaneously, as is the case with stars of the same magnitude (seventh). The disappearance of satellites III., II., and IV. occupied 1″·5, 1″·1, and 0″·5 respectively, giving for their several diameters 0″·46, 0″·30, and 0″·15.—On the angle of polarization of the moon, by M. J. J. Landerer. A method is described by means of which this element has been determined at 33° 17′, a mean value resulting from eleven series of observations with probable error ± 7′. The same process is equally applicable to the planet Venus.—On the solar spots, by M. G. Spœrer. Besides some brilliant protuberances, the large spot visible from June 16 to 18 was observed on the last day at 10.43 a.m. at Potsdam. But a photograph of the same taken a few minutes before the observation shows no trace of the spot, which is replaced by an even depression on the solar rim, exactly where the spot had been observed. An explanation is suggested of this phenomenon.—Specific heat of aqueous vapour under constant volume, by M. Ch. Antoine. For Regnault's curves of the form $x = A + Mt_s - Nt_s^2$, the author substitutes functions of the temperature t and of the tension p, such as $x = B + ct_s = \phi(p)$, deducing for aqueous vapour two determinations for specific heat under constant pressure and constant volume. Analogous formulas may be obtained for other vapours, such as ether, chloroform, acetone, benzene, chloride, and sulphide of carbon.—Papers were contributed by M. Léo Vignon on the action of water on stannic chloride; by M. G. Raulin, on the action of phosphates on the growth of cereals; by M. C. Timiriazeff, on the relation between the intensity of solar radiation and the decomposition of carbonic acid by plants; and by M. Armand Sabatier, on the zoological station at Cette.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

Marine Aquaria: R. A. R. Bennett (Gill).—Narrative of an Explorer in Tropical South Africa; F. Galton (Ward, Lock).—The Mathematical Theory of Electricity and Magnetism; vol. ii. Magnetism and Electrodynamics: Watson and Burbury (Clarendon Press).—Bulletin of the U.S. National Museum; No. 34. The Batrachia of North America: E. D. Cope (Washington).—Bulletin of the U.S. National Museum; Contributions to the Natural History of the Cetaceans, a Review of the Family Delphinidæ: F. W. True (Washington).—Calcul des Probabilités: J. Bertrand (Paris, Gauthier-Villars).—Die Fossilen Pferde der Pampasformation: Dr. H. Burmeister (Buenos Aires).—Elementary Physiography, 2nd edition: G. Thom (Edinburgh, Thin).—The Eiffel Tower: G. Tissandier (Low).—Brain, July (Macmillan).—The Esclepiad, No. 23, vol. vi.: Dr. B. W. Richardson (Longmans).—Journal of the College of Science, Imperial University, Japan, vol. iii., Parts 1 and 2 (Tōkyō).

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