parison of maps of the ultra-violet spectrum, by Edward C. Pickering. Prof. Rowland's recently published photograph of the solar spectrum is compared with Draper's map of the ultra-violet portion of the spectrum prepared in 1873, with which it is shown to agree very closely. The mean difference for the seventy-six lines compared was 0·012, corresponding to about 1/800 inch upon the Draper map. It may therefore be assumed that the probable error of a wave-length derived from this map will not exceed 1/100 unit if the correction here given be first applied.—On two hitherto undescribed meteoric stones, by Edward S. Dana and Samuel L. Penfield. One of these meteorites was found, in 1869, between Salt Lake City and Echo, Utah; the other, in 1846, near Cape Girardeau, South-West Missouri. Olivine is the most prominent constituent of the former, while the latter is a light gray chondrite.

SOCIETIES AND ACADEMIES

PARIS

Academy of Sciences, September 20.—M. Fizeau in the chair.—Kinematic analysis of human motion, by M. Marey. In the figure accompanying this paper are represented the successive attitudes of the lower right limb while describing a complete step. This action is shown to be divided into two periods, a rest and a rise, which are again subdivided into four unequal phases, of which the last three belong to the period of rise. The simultaneous movements of ankle, knee, and hip are explained, and it is pointed out that, whatever be the velocity of the pace, the form of the various trajectories here described is maintained in their salient features. But, the more rapid the motion, the more is the tendency of the centre of gravity to approach a straight line parallel with the surface of the ground.—"Modern Kinetics and the Dynamism of the Future," by M. G. A. Hirn. This is the title of a new work, which the author presents to the Academy with some remarks explaining its general purpose. After replying to the various objections raised against his general principles, he deals with the arguments which, as he maintains, render henceforth indefensible the kinetic theory of the gases, referring to molecular movements most of the properties of these bodies. Three arguments are advanced of such a nature that he believes future physicists will wonder how this kinetic theory could ever have been accepted for a single moment. Even were it correct, it would not follow that light, radiant heat, electricity, magnetic attraction and repulsion, and gravitation were due to movements of ponderable matter, far less that thought itself was nothing more than a molecular movement. But the reverse is not true, so that with the collapse of the kinetic theory of the gases fall the kinetic theories in general, which claim to explain all possible phenomena of the universe by invisible movements of matter. The doctrine here substituted for kinetic force, he thinks, explains quite as easily, and much more rationally, the universal phenomena of the physical world. He does not, however, hope at once to convince all minds of what they should have long ago been themselves convinced. Interpretations formulated *a priori*, and apart from experience and observation, have unfortunately more vitality than truths gained to science by the patient study of Nature.—Observations of Winnecke's comet made at the Observatory of Nice (Gautier equatorial), by MM. Perrotin and Charlois. The results of these observations, which extend over the four days from August 27 to September 1, are embodied in tables showing the positions of the stars 25339 Lalande, 25588 Lalande, 4989 Schjellerup, 5004 Schjellerup, and the apparent positions of the comet.—On the transformation of algebraic surfaces in themselves, by M. Emile Picard. A proposition analogous to that of Schwarz is thus formulated: Algebraic surfaces capable of being transformed in themselves by a bi-rational substitution, including two arbitrary parameters, are of the genus zero, or one.—On a class of differential non-linear equations, by M. Roger Liouville.—Historical note on a series whose general term is of the form $A_n (x - a_1)(x - a_2) \ldots (x - a_n)$, by M. G. Enestrom.—Researches on the structure of the nerve-centres in the Arachnidæ, by M. G. Saint-Remy. Having in a previous communication dealt with the structure of the brain of the scorpion, the author here extends his observations to the spider family, and more particularly to *Tegenaria domestica*, *Epeira diadema*, and *Phalangium opilio*. In these groups he shows that the brain offers the same plan of organisation as that of the Scorpionidæ.—Fresh researches on the configuration and extent of the Carmaux Coal-measures, by MM. Alfred Caraven-Cachin and Grand. In this basin, which extends for nearly six miles from Rozières to Saint-Quentin, there are in some districts three successive coal-deposits with a joint thickness of over 31 metres underlying Tertiary formations 156 metres thick. They appear to have been deposited horizontally, always in shallow water, the land subsiding sometimes slowly, sometimes intermittently, during the whole period of their formation.—Note on the affinities of the Oolitic floras in the West of France and in England, by M. L. Crié. In this paper the author communicates the first result of his studies of the Oolitic floras of these regions. The conifers are represented at Mamers (Sarthe) and at Scarborough (Yorkshire) by traces of Brachyphyllum, which present a remarkable identity. Certain imprints at Scarborough also show a strong resemblance, in the disposition of the foliage, and especially in the veinous system, to *Otozamites marginatus*, Sap., which is so characteristic of the Mamers flora. About the middle of the Oolitic period this group must have covered certain upheaved tracts in the Venetian Alps, in the neighbourhood of Mamers, and at Scarborough.—The waterspout of September 14 at Marseilles, by M. Barthelet.

BOOKS AND PAMPHLETS RECEIVED

"How Readest Thou? or the First Two Chapters of Genesis," by E. Dingle (Partridge and Co.).—"The Chalk and Flint Formation," by W. B. Galloway (Low and Co.).—"Life-History of Plants," by Prof. D. M'Alpine (Sonnenschein).—"Tobacco: a Farmer's Plant," by P. M. Taylor (Stanford).—"Therapeutics founded upon Organopathy and Antipraxy," by W. Sharp, M.D. (Bell and Sons).—"Report of the Iowa Weather Service, January to April 1883," by Dr. G. Hinrichs.—"Scientific Romances: No. v. Casting out the Self," by C. H. Hinton (Sonnenschein).—"Lessons in Elementary Dynamics," by H. G. Madan (Chambers).—"Studies in Ancient History," N.E., by J. F. McLellan (Macmillan).—"Manual of the New Zealand Coleoptera," parts 3 and 4, by Capt. T. Brown (Didsbury, Wellington).—"School of Forest Engineers in Spain," by Dr. J. C. Brown (Oliver and Boyd).—"Hand-book of Mineralogy," by J. C. Foyr (Van Nostrand, N.Y.).—"Monographs U.S. Survey," vol. ix. (Washington).—"Hommage à M. Chevreul, à l'Occasion de son Centenaire" (Alcan, Paris).—"The Handy Natural History," by J. G. Wood (Religious Tract Society).—"General Report on the Operations of the Survey of India Department," 1884-85, by Col. G. De Prée (Calcutta).—"Notes on the Bones of a Species of Sphenodon," by W. Colenso.—"The Economical Aspects of Agricultural Chemistry," by H. W. Wiley (Wilson, Camb., Mass.).—"Report on the Decapod Crustacea of the *Albatross* Dredgings off the Coast of the United States," by S. I. Smith (Washington).—"Metodo per Misurare la Dilatazione Termica dei Corpi Solidi: Memoria di F. Artimini (Firenze).—"The Cause of Electricity, with Remarks on Chemical Equivalents," by G. T. Carruthers (Benares).

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