

trains. It consists of a drum turned by clockwork, over which a continuous slip of paper passes. This paper is marked by two pencils which can at any time be brought into contact with it. One of these gives a straight line which shows the beginning, ending, and line of duration of an experiment. The other receives a reciprocating motion from one of the wheels of the locomotive, and so gives a continuous series of curves, the relative closeness of which to each other measures the speed of the train. From results given by this instrument a very instructive curve was drawn, showing the manner in which a train comes to rest. Experiments were made on a piece of level line on the Midland Railway, between Nottingham and Newark. On a calm day a train weighing 125 tons, and moving at the rate of 45 miles an hour, ran 5 miles and 5 yards after the steam was shut off.

SOCIETIES AND ACADEMIES

LONDON

Entomological Society, August 2.—Mr. F. D. Godman, M.A., F.R.S., vice-president, in the chair.—One new Member was elected.—Exhibitions: *Macropis labiata*, by Mr. F. Enoch; *Paragus tibialis* and *Discomyza incurva*, by Mr. T. R. Billups; *Cicindela*, sp. from Babylon, by Miss E. A. Ormerod; *Xyleborus saxosenu* (destructive to ale-casks sent out to Rangoon), by Mr. W. L. Distant.—Papers read: Notes on the life-history of *Sitones lineatus*, by Mr. T. H. Hart, read by Miss Ormerod.—On a visit to Ceylon, and the relation of Ceylonese beetles to the vegetation there, by Mr. G. Lewis, who had captured about 1200 species of beetles in Ceylon in five months.—On certain temperature forms of Japanese butterflies, by Mr. H. Pryer.

PARIS

Academy of Sciences, August 21.—M. Boussingault in the chair.—The following papers were read:—On longitudinal shock of a free elastic bar against an elastic bar of other matter or of another size, fixed at the end not struck; consideration of the extreme case in which the striking bar is very rigid and very short, by M. de Saint-Venant.—On the vaso-motor effects produced by excitation of the peripheric segment of the lingual nerve, by M. Vulpian. This nerve seems to have a certain degree of recurrent sensibility, manifested on stimulating the peripheric segment of the cut nerve, by contraction of the vessels in the opposite half of the tongue.—On the appearance of manganese on the surface of rocks (continued), by M. Boussingault. This relates chiefly to the *Challenger* observations. The sea and rivers contain carbonic acid favouring the dissolution of insoluble carbonates. When, from any cause, the acid gas is expelled, the salts are precipitated; the carbonates of protoxide of iron and protoxide of manganese, once in contact either with the oxygen of the air, or with that dissolved in the water, are modified by sur-oxidation of their bases; the carbonate of iron produces a red sesquioxide, the carbonate of manganese a black oxide.—Some observations on the phylloxera of Savoy, by M. Lichtenstein. The multiplication is very much less in Savoy and other regions, where the temperature is below 20° to 25° in summer. Seven species of phylloxera are now distinguished in France.—Observations at Marseilles Observatory, by M. Borrelly.—On the solar metallic eruptions observed at Rome during the first half of 1882, by P. Tacchini. Forty-three were observed, twenty-four north of the solar equator, and nineteen south. A maximum occurred in March. The number of lines was always small, and the solar activity was far from that of the preceding epoch of maximum. The line Bc was the most frequent. The only splendid eruption was on June 21; its maximum height was about 167". The maxima of the eruptions were between ± 10° and ± 20°, nearly as with the spots; but they extended to greater latitudes.—Broadening of the spectral lines of hydrogen, by M. Van Monckhoven. He concludes from experiments that the broadening is quite independent of temperature, and solely due to pressure.—On the longitudinal shock of an elastic rod fixed by one of its extremities, by MM. Sébert and Hugoniot.—On approximate quadratures and cubatures, by M. Mansion.—Hydrodynamic experiments; imitation by liquid or gaseous currents of stratifications of the electric light in rarefied gases and of various forms of the electric spark (seventh note), by M. Decharme. He moves horizontally and quickly over a plate covered with minium, a tube with issuing current of liquid or air.—Remarks on the subject of M. Tommasi's communication on the numerical relations between thermal data, by M. Le Blanc.—On a synthetic type of Annelid (*Anoploneis Hermannii*) commensal of

Balanoglossus, by M. Giard.—The quaternary formation of Billancourt, by M. Riviere.—Chemical composition of the banana at different degrees of maturation, by M. Ricciardi. The green banana contains about half of its weight of starch, which disappears in the ripe fruit, and the sugar in the fruits ripened on the plant is almost entirely cane sugar; that of the fruits ripened after gathering, four-fifths inverted sugar, the rest cane sugar. The tannic substances and organic acids of the green fruits disappear in the ripe fruits. M. Ricciardi considers the CO₂ produced by the banana in the third period of its maturation is not due to alcoholic fermentation.—On modifications of the epidermic structure of leaves under various influences, by M. Mer.—Observations on an earthquake at Couchey (Côte d'Or), by M. Guillemot. This occurred at 4.25 a.m., on August 14; a single dull shock was followed by an oscillation south-south-east to north-north-west, lasting half a second. The shock was felt over at least 14 kilometres.

August 28.—M. Wurtz in the chair.—M. Mouchez communicated an address he had given at the inauguration of a statue to Fermat at Beaumont-de-Lomagne.—Meridian observations of small planets and of the comet Wells, at Paris Observatory, during the second quarter of 1882, by M. Mouchez.—On the inclination of the magnetic needle, by M. d'Abbadie. His observations with an inclination-needle of MM. Brunner, only 0°063m. long, prove its accuracy.—Communication on black phosphorus, by M. Thenard. As against doubts of the existence of black phosphorus, he states that lately, when moulding phosphorus in the usual way, and after getting a dozen rods, all of the ordinary colour, the thirteenth blackened suddenly throughout at the moment of cooling. The phenomenon was afterwards reproduced in a partial way.—Separation of gallium (continued), by M. Lecoq de Boisbaudran.—A communication by M. Chevreul affords evidence that Joseph Hubert, the friend and successor of Poivre in the island of Reunion, recognised, as early as 1788 (some ten years before English and German savants), the gyratory character of cyclones. In 1818 Hubert got the complete and correct formula expressing their double motion of gyration and translation (several years before Dove).—Observations of planets 227 and 229 with the western equatorial of the garden of Paris Observatory, by MM. Henry.—Solution of the problem of Kepler for considerable eccentricities, by M. Zenger.—On the formation of secondary couples with plates of lead, by M. Planté. He accelerates the formation of the couples, by first keeping them immersed twenty-four hours in nitric acid diluted one-half of its volume with water. The porosity produced extends the chemical action, which occurs on alternation of the primary current. These couples, in eight days, and after three or four changes of direction of the primary, yield results which were formerly obtainable only after several months' treatment.—M. Larroque presented a note on the transport, by lightning, of ferruginous particles contained in dust of the air. To this he attributes the persistence of the magnetic property observed in certain trees.

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