lated and reprinted from other serials, besides several original ones. We note the following :—On the fossil vertebrata of the State of Nebraska, by M. Delafontaine. On the measurement of altitudes in Switzerland, executed by MM. Hirsch and Plantamour. On the action of galvanic currents upon alloys or amalgama, by M. Eugène Obach. On some experiments with Holtz's machine, by F. Rossetti. Researches on the spectrum of chlorophyll, by J. Chautard.

SOCIETIES AND ACADEMIES

LONDON

Linnean Society, June 3.—Dr. G. J. Allman, F.R.S., president, in the chair.—The President nominated the following gentlemen as Vice-presidents for the ensuing year, viz. :—Mr. G. Bentham, F.R.S. ; Mr. G. Busk, F.R.S. ; Dr. J. G. Jeffreys, F.R.S. ; and Dr. J. D. Hooker, P.R.S.—Prof. Thiselton Dyer exhibited, under the microscope, some specimens of the very rare Alga *Stephanosphæra pluvialis*, known to occur only in a single locality in Britain, a pool on Bray Head, in Ireland.—Dr. Trimen exhibited specimens of two recent additions to the British flora, *Zannichellia polycarpa*, found by Dr. Boswell-Syme in the Orkney Islands in 1847, and *Carex ornithopoda*, discovered by two working men in Derbyshire.—Mr. Pascoe exhibited a very fine collection of Crustacea from the Bay of Naples. The following papers were then read :—On the Barringtoniaceæ, by J. Miers, F.R.S. The purpose of this paper is to show that the Barringtoniaceæ constitute a distinct order, forming an extremely natural group with peculiar and uniform characters, differing from the Myrtaceæ in their alternate leaves without pellucid dots, and in the nature of their inflorescence and fruit. They are trees, frequently of large size, rarely low shrubs, all delighting in running streams, some growing in estuaries or along the sea-shore. The author describes the characters of the order in considerable detail, and gives the diagnosis—in many cases redrawn from actual examination—of each genus and species. The number of genera he makes to be ten. The paper was accompanied with drawings illustrating the floral and carpological characters of each genus.—Note on the occurrence of fairy rings, by Dr. J. H. Gilbert, F.R.S. This paper was founded on the observations made by the author and Mr. Lawes on their experimental plots at Rothamstead. After some particulars as to the effect of different manures in varying the proportion of different kinds of vegetation in permanent pasture, especially grasses and Leguminosæ, the author suggests that the determination of the source of the nitrogen in the fungi that constitute the fairy rings which frequently make their appearance on the plots would throw some light on the much-disputed question of the source of the nitrogen of the Leguminosæ. It is remarkable that although, according to published analyses of various fungi, from one-fourth to one-third of their dry substance consists of albuminoids or nitrogenous matter, and 8 to 10 per cent. of mineral matters or ash, of which about 80 per cent. is potassium phosphate; yet the fungi develop into "fairy rings" only on the plots poorest in nitrogen and poorest in potash. The questions which appear still to require solution are these :—(1) Is the greater prevalence of fungi under such circumstances due to the manurial conditions themselves being directly favourable to their growth? or (2) Are the lower orders of plants—in consequence of other plants and especially grasses growing so sluggishly under such conditions—better able to overcome the competition and to assert themselves? (3) Do the fungi prevail simply in virtue of the absence of adverse and vigorous competition, or to a greater or less extent as parasites, and so at the expense of the sluggish underground growth of the plants in association with them? or (4) Have these plants the power of assimilating nitrogen in some form from the atmosphere ; or in some form or condition of distribution within the soil, not available, at least when in competition, to the plants growing in association with them?—On a possibly wild form of *Hibiscus Rosa-sinensis*, by Prof. Oliver, F.R.S.

Mathematical Society, June 10.—Prof. H. J. S. Smith, F.R.S., president, in the chair.—Prof. Cayley, F.R.S., made a brief communication on some figures of curves in 3-bar motion. —Prof. Sylvester, F.R.S., spoke on "James Watt's parallel motion," and on an apparatus for regulating the motion of a train of prisms.—Mr. T. Cotterill read a paper on the correspondence of points collinear with a fixed origin. In the paper S and T are taken homogeneous functions of any number of variables (say three, $x\ y\ z$): the degree of S being one lower than that of T, and are supposed to be connected with another set, $x'\ y'\ z'$, of the same number of variables by the equations $\frac{x'}{x} = \frac{y'}{y} = \frac{z'S}{T}$. If the variables $x\ y\ z$, $x'\ y'\ z'$, denote the co-ordinates of two points in a plane, a correspondence is established between them depending on the forms of S and T. The object of the paper is to explain the relations between the corresponding curves and to give examples.

Physical Society, June 12.—Prof. Gladstone, F.R.S., president, in the chair.—Lord Lindsay, Sir W. Thomson, and Prof. Sylvester were elected members.—Mr. Wildman Whitehouse described some experiments he had made on the electric conductivity of glass. He employed pieces of thermometer tube about an inch in length, into the bore of which two platinum wires were inserted in such a manner that there was an interval between the points. In some cases one wire of platinum occupied the entire bore of the tube, and this tube was surrounded on its external surface by a helix of wire of the same metal. In each case the arrangement was introduced into a circuit in which were also placed a Thomson galvanometer and a set of resistance coils. It was shown that at the ordinary temperature there was no deflection, but that the current passed freely when the glass was heated to redness. The difficulty of making contact with the glass led Mr. Whitehouse to use two test-tubes, one inside the other, both containing mercury, with which wires of platinum freely communicated. The flame of a Bunsen burner was applied to the outer test-tube and the temperature of the metal noted by the aid of a thermometer. In one series of experiments the diameter of the internal tube was $\frac{5}{8}$ inch, the length in contact with the mercury about $3\frac{3}{4}$ inches, and the thickness of the glass $\frac{1}{10}$th of an inch. A current was first observed to pass at 100° C., and, as the temperature rose, the amount of deflection increased. The following are approximate measurements of the resistance of the glass at different temperatures :—

At 165° C.	Resistance	=	229,500	Ohmads
,, 185 ,,	,,	=	100,000	,,
,, 210 ,,	,,	=	69,000	,,
,, 255 ,,	,,	=	22,500	,,
,, 270 ,,	,,	=	9,000	,,
,, 300 ,,	,,	=	6,800	,,

Prof. Gladstone drew attention to the necessity for ascertaining the nature and composition of the glass.—Prof. Guthrie alluded to the fact that electricity of high tension is freely conducted by glass at a red heat. He also asked whether, as the temperature was raised, a point was reached at which the conductivity began to decrease.—Prof. M'Leod pointed out that the thermometer tubes used by Mr. Whitehouse were of lead glass, and that the lead had in most cases been reduced by exposure to the flame of the Bunsen burner, and he urged that these facts should not be overlooked in measuring the resistances. He stated that lead glass is better than other kinds of glass for insulation.—Prof. G. C. Foster asked whether an increased capacity due to the heating might not introduce an error into the measurements of resistance. Mr. Whitehouse replied that he had only recently commenced the experiments, and promised that the suggestions which had been made should receive due attention.—The President then read a paper on the time required for double decomposition of salts. It is well known that if, on mixing solutions of two salts, MR and $M'R'$, an insoluble body can be produced by an interchange of metals and radicals, that body is produced to the fullest extent possible. The only explanation of this fact which has been given is founded on the theory of Bertholet, that in all cases of mixture there is a redistribution of the constituents according to their relative affinity and mass, with the production of more or less MR' and $M'R$. Now, if one of these, say MR', be insoluble, it will remove itself at once from the sphere of action, but this will necessitate a fresh distribution of the constituents with the production of more insoluble salt, and so on until the whole of the M has entered into combination with R'. Dr. Gladstone commenced this research twenty years ago, and added in a note to a paper in the Phil. Trans. : "It is easily conceivable that when the affinity for each other of the two substances that produce the insoluble compound is very weak, the action may last some time and become evident to our senses. Is not this actually the case when sulphate of lime in solution is added to nitrate of strontia, or carbonate of soda to chloride of calcium, or an alkaline carbonate to tartrate of yttria, or oxalate of

ammonia to sulphate of magnesia, &c.?"—The President gave several experimental illustrations of the time required for double decomposition. He showed that ferric chloride and sulphocyanide of potassium react instantly, that citrate of iron and meconic acid, chloride of platinum and iodide of potassium, react gradually. The rate of change really depends on the degree of rapidity of the inter-diffusion of the salts. It is also affected to a very great extent by temperature. The following numbers illustrate the rate at which sulphate of strontium is deposited on the addition of sulphate of calcium to a solution of nitrate of strontium. :—

Cloud		in	4 minutes
0·071	grms.	,,	20 ,,
0·130	,,	,,	60 ,,
0·303	,,	,,	110 ,,
0·497	,,	,,	170 ,,
0·659	,,	,,	1270 ,,

The total amount of salt which could be formed being 1·5 grms.

Astronomical Society, June 11.—Prof. Adams, president, in the chair.—Mr. Lecky explained the use of two ancient instruments he had given to the Society. The smaller one was known as a night dial; it was used about the end of the sixteenth century for finding the time at night by the position of the pointers of the Great Bear. The observer stood with his face to the north, and the instrument was held in one hand, so that a line upon it was by estimation vertical to the horizon; and with the other a moveable arm like a clock hand was turned until it was parallel to the direction of the pointers. The time was then read upon the circumference of a boxwood circle, which had to be set afresh for every night of the year. The other instrument was a Backstaff, which was used at sea until the invention of the sextant for determining the sun's altitude. The observer in using it stood with his back to the sun (whence its name), and he measured the arc between the sun's place and the opposite horizon through the zenith. The instrument which was in use before this was a very simple contrivance, being merely a pole along which a moveable bar at right-angles was shifted, until the cross-bar subtended the same angle when looked at by the observer with his eye at the end of the pole as the sun's altitude. Such contrivances were called Forestaffs, and were in use at sea until 1591, when Capt. Davis invented the Backstaff.—Mr. Marth exhibited a drawing of the orbits of the satellites of Saturn as they will be seen from the earth about the middle of August next, when there will be a conjunction of the satellite Iapitus with the ring and ball of Saturn. Mr. Marth was anxious that observations of this conjunction should be made by the possessors of large telescopes, in order to afford data for the improvement of the theory of the satellites of Saturn.—A paper was read by Mr. Knobel on an instrument for determining the magnitudes of stars.—Mr. Christie said that the probable error in determining the magnitude of a star with his photometer amounted to only the twentieth of a magnitude, but that the probable error varied for stars of different colours, owing to the effect of contrast with the light of the sky, which caused a red star to be more easily distinguished when its light was diminished than a star with a blue tinge.

Anthropological Institute, June 8.—Col. A. Lane-Fox, president, in the chair.—Capt. Richard F. Burton, H.M. Consul at Trieste, read two papers on Ancient Remains in Dalmatia, viz., "The Long Wall of Salona" and "The ruined cities of Pharia and Gelsa di Lesina." Salona was the Roman metropolis of Dalmatia, of which southernmost province of Austria, Spalato was at present the natural, and Zara the artificial and political capital. The "long wall" was of doubtful and debated origin, and a reference to numerous ancient and a few modern writers on it was made to show the obscurity in which it still remains. The author gave an account of his explorations, with detailed measurements of the ancient structure, called by some "Cyclopean," and especially pointed out the great variety of stone dressing it presented, which would afford valuable evidence in determining the style and perhaps the date of the work. His conviction that the long wall of Salona was Greek and pre-Roman rested very much upon the fact that similar constructions exist in the neighbourhood. In the island of Lesina the two ruins visited and described by Capt. Burton presented a remarkable resemblance, amounting almost to identity, to the long wall of Salona, and suggested that they were all the work of a single people, and that people not the barbarous Illyrians, but the comparatively civilised Greeks. Only two flint implements had been found, and those were discovered at Salona, near Spalato. The exploration of the Dalmatian Islands was attended with much difficulty; the scarcity of water was an evil to be met, and a Slavic guide was necessary unless the traveller could himself speak Slavic, for the inhabitants all belong to that race. The islands never having been previously explored (as far as the author was aware) by Englishmen, there was a large field of research for the antiquarian as well as the more general anthropologist.

PARIS

Academy of Sciences, June 7.—M. Frémy in the chair.—The following papers were read:—On the different effects produced by the same temperature upon the same species of plants, in the north and in the south, by M. A. de Candolle.—Researches on magnetic rotatory polarisation, by M. Henri Becquerel.—On a new method and a new instrument for telemetry (quick measurement of distances), by M. Giraud Teulon.—On the transformation of the camphor of *Laurineæ* into camphene, and reciprocally of the camphenes into camphor, by M. J. Riban.—A note, by M. J. Ponomareff, on thiammeline, a new derivative of persulphocyanogen.—On the dissociation of sulphocarbonate of potassium in the presence of ammonia salts, by M. Rommier.—On the theory of revolution surfaces which, by way of deformation, can be superposed on one another, and each on itself in all its parts, by M. F. Reech.—Communications on Phylloxera, by several gentlemen.—Several papers of minor interest, competing for the prize of Medicine and Surgery.—On the geographical position of the island of St. Paul, by M. Mouchez; he finds the latitude to be 38° 42′ 50″·796 S. (with a probable error of 0″·03), and the longitude, 5h. 0m. 49s. (probable error, 4s.).—On fluorene and the alcohol derived from the same, by M. Ph. Barbier.—Researches on taurine, by M. R. Engel.—On the bibromide of angelic acid, by M. E. Demarcay.—On three observations of accidents from lightning, by M. Passot.—Analysis of the mineral coal of the Suderoe Island (one of the Faroes), by MM. Bechin and Ch. Mène.—Remarks by M. Tresca, on a projected atmospheric post between Paris and Versailles.—A note by M. Emm. Liais, on the parallax of the sun.—M. Vibraye then drew the Academy's attention to the apparition of a destructive hemipterous insect in the vineyards of the Loir et Cher Department. The insect is very similar to *Phytocoris gothicus*.—Remarks by M. J. de Cossigny, on waterspouts.—On a new propeller of steamships, by M. E. Lehman.

BOOKS AND PAMPHLETS RECEIVED

BRITISH.—Encyclopædia Britannica, 9th edit., vol. ii. (A. and C. Black).—On the Principles and Management of the Marine Aquarium: Wm. R. Hughes, F.L.S. (John Van Voorst).—The Life and Growth of Language. International Series: W. Dwight Whitney (Henry S. King and Co.)—First Annual Report of the Yorkshire College of Science, Leeds.—The Positive Philosophy of Auguste Comte: freely translated and condensed by Harriet Martineau. 2 vols. (Trübner)—The Geological Evidences of the Antiquity of Man reconsidered—an Essay by Thos. Karr Callard, F.G.S. (Elliot Stock).—Corals and Coral Islands: Jas. D. Dana (Sampson Low and Co.)—An Introduction to the use of the Mouth-Blowpipe: Scheerer and Blandford (Frederic Norgate).

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