## *SCIENTIFIC SERIALS.*

*American Journal of Mathematics*, vol. x. No. 1 (Baltimore: Johns Hopkins University, 1887).—The number opens with the concluding lecture (the 33rd) of Prof. Sylvester's course on the theory of reciprocants, in which is investigated the differential equation of a cubic curve having a given absolute invariant $S^3/T^2$. A supplemental "lecture" is supplied by the reporter (Mr. Hammond) from the lecturer's surplus material: this "constitutes probably the most difficult problem in elimination which has been effected up to the present time." All admirers of Prof. Sylvester's brilliant genius will be glad to have the fine presentment of his features which accompanies this number.—Algebraic surfaces of which every plane section is unicursal in the light of *n*-dimensional geometry is devoted to a proof and to illustrations, by Mr. E. H. Moore, Jun., of a theorem due to Picard, viz. "Les seules surfaces algébriques dont toutes les sections planes sont unicursales sont les surfaces réglées unicursales et la surface du quatrième degré de Steiner."—Mr. Morgan Jenkins, in a paper on Prof. Cayley's extension of Arbogast's method of derivations, presents in a simplified form results given by the elder mathematician in a memoir printed in the Phil. Trans. (read December 1860).—Properties of a complete table of symmetric functions, by Capt. P. A. Macmahon, R.A., establishes some remarkable features of a tabulation set forth by Mr. Durfee in vol. v. of the *Journal*.—Oskar Bolza, in his article on binary sextics with linear transformations into themselves, considers those binary sextics which remain unchanged (or are only changed by a constant factor) for certain linear transformations of the variables.—Prof. Cayley follows with the sequel to his memoir on the transformation of elliptic functions (vol. ix.), and Prof. Woolsey Johnson closes the number with the symbolic treatment of exact linear differential equations.

*Bulletin de la Société des Naturalistes de Moscou*, 1887, iii.—Comparative osteology of the penguins and its bearing upon the classification of birds, by Dr. M. Menzbier (in German; with a plate).—The Hessian fly, by Prof. K. Lindeman (in German).—Chemical composition of the Lipetsk mineral springs, by A. Kislakovsky. A series of chemical analyses has been undertaken in order to ascertain how far the composition of the springs is liable to undergo changes at different times of the year. The admixture of water flowing from sweet springs makes the amount of $FeCO_3$ to vary from 0·016 to 0·032, and from 0·008 to 0·025 in different springs.—On the increase in the number of thunderbolts and its causes, by J. Weinberg (in German).—Enumeration of the vascular plants of Caucasus, by M. Smirnoff (in French). This fourth paper of the introduction which the author has written to precede his enumeration of plants discusses the following important subjects: evaporation, limits of perennial snow in Caucasia and neighbouring highlands, the present and ancient glaciers of Caucasus, and the geology of the country since the later Tertiary. The twelve botanical regions into which the author divides Caucasia are given with short characteristics of their physical features. On the whole the paper is a most valuable contribution to the knowledge of Caucasus.—List of plants growing in the province of Tamboff, by D. Litvinoff (continued).—*Otiorhynchus turca*, Steven, an enemy of the vine-tree, by E. Ballion. It has been found at Novorosiysk, on the east coast of the Black Sea, and must have immigrated from Asia Minor and Syria.

## *SOCIETIES AND ACADEMIES.*

### LONDON.

**Mathematical Society**, November 10.—Sir J. Cockle, F.R.S., President, in the chair.—Prof. Sylvester, F.R.S., being incapacitated by an accident to his leg from attending in person to receive the De Morgan Medal, awarded him by the Council in June last, deputed Mr. J. Hammond to represent him. The President, after a few remarks eulogistic of Prof. Sylvester's numerous discoveries, presented the medal to Mr. Hammond, who made a felicitous reply.—The Treasurer (A. B. Kempe, F.R.S.), after having read his Report, announced to the meeting that the Society's application to the Privy Council for the grant of a charter had failed.—The following were elected to act as the Council for the ensuing session:—President: Sir J. Cockle, F.R.S. Vice-Presidents: Dr. J. W. L. Glaisher, F.R.S., Prof. Hart, and Lord Rayleigh, Sec.R.S. Treasurer: Mr. A. B. Kempe, F.R.S. Hon. Secs.: Messrs. M. Jenkins and R. Tucker. Other Members: Messrs. A. Buchheim, E. B. Elliott, A. G. Greenhill, J. Hammond, J. Larmor, C. Leudesdorf, Captain P. A. Macmahon, R.A., S. Roberts, F.R.S., and J. J. Walker, F.R.S.—The following communications were made:—On pure ternary reciprocants and functions allied to them, by E. B. Elliott.—On the general linear differential equation of the second order, by the President.—On the stability of a liquid ellipsoid which is rotating about a principal axis under the influence of its own attraction, by A. B. Basset.—On modular equations and geometry of the quartic, by R. Russell.—The differential equations satisfied by concomitants of quantics, by A. R. Forsyth, F.R.S.—On the stability or instability of certain fluid motions (ii.), by Lord Rayleigh, Sec.R.S.—Notes on a system of three conics touching at one point, by Dr. Wolstenholme.

**Geologists' Association**, November 4.—Mr. F. W. Rudler, President, in the chair.—The President delivered the opening address of the session, entitled "Fifty Years' Progress in British Geology." He drew a picture of the state of geology in 1837, and contrasted it with that in 1887. The principal questions discussed were the old controversy between the Catastrophists and Uniformitarians, the development of Palæozoic geology, the origin of the Drift, and the antiquity of man. In recent years the warmest discussions have referred to the Archæan rocks and to the Glacial Drift. Attention was directed to the debt which geology owes to engineering, especially to the development of our railway system and to artesian borings. The sub-Wealden exploration was explained, and a Jubilee boring suggested. Deep-sea exploration was touched upon. Turning to petrology, its low condition in 1837 was pointed out, and its recent development traced to the introduction of microscopic methods of research. The history of palæontology was briefly sketched, special attention being called to the work of the Palæontographical Society. Improvements in the Geological Department of the British Museum were noticed, and reference was made to the history of the Geological Survey and the Museum of Practical Geology. In conclusion, it was pointed out that by a happy accident the meeting of the International Geological Congress in London next year will coincide with the centenary of the foundation of British geology—the original publication of Hutton's "Theory of the Earth" in 1788.

**Chemical Society**, November 3.—Mr. William Crookes, F.R.S., President, in the chair.—The following papers were read:—Note on the atomic weight of gold, by Prof. T. E. Thorpe, F.R.S., and Mr. A. P. Laurie.—The ni teraction of zinc and sulphuric acid, by Mr. M. M. Pattison Muir and Mr. R. H. Adie.—Note on safety-taps, by Mr. W. A. Shenstone.—Note on Guthrie's compound of amylene with nitrogen peroxide, by Dr. A. K. Miller.—The dehydration of metallic hydroxides by heat, with special reference to the polymerization of the oxides and to the periodic law, by Prof. Carnelley and Dr. James Walker, University College, Dundee.—The bromination of naphthalene β-sulphonic acid, by Mr. G. Stallard.—The constitution of the three isomeric pyrocresols, by Dr. W. Bott.—Preliminary note on certain products from teak, by Mr. R. Romanis.

### PARIS.

**Academy of Sciences**, November 7.—M. Janssen in the chair.—On a paradox analogous to the St. Petersburg problem, by M. J. Bertrand. The paper deals with the doctrine of probabilities, and shows that, if a gambler plays under conditions involving all but inevitable ruin, equity requires the remotely contingent prize to be infinite.—On the state of the potassa in plants, in the soil and vegetable humus, and on its quantitative analysis, by MM. Berthelot and André. These studies have been undertaken to determine how far the potassa present in plants and arable land is in the condition of salts soluble in water, or of insoluble salts capable or not of resisting the action of attenuated acids. The researches are in continuation of those already described connected with the analysis of the soluble and insoluble carbon present in the soil, and of the nitrous compounds in their various forms of nitrates, free ammonia, &c.—Inquiry into the two fundamental principles of the accepted doctrines regarding cerebral dualism in voluntary motions, by M. Brown-Séquard. In continuation of his recent communication on this subject, the author here advances facts and arguments, some of which go directly to show that each half of the encephalon may independently serve for the production of voluntary movements in both sides of the body, while others