

order to obtain the length of the arc of any orthogonal trajectory to the two geodetic lines in question, comprised between the same lines. Prof. Geiser of Zurich has generalised, for any number of dimensions, or translated into an analytical fact for any given number of variables, "A theorem of Steiner relating to properties common to all the Maximum Triangles inscribed in a given Ellipse." A communication from the illustrious Clebsch, professor at Göttingen, refers to those "Surfaces which have the property of being representable point by point above a plane." Such representations are known to afford an extremely powerful instrument of geometric analysis. Prof. Bardelli has collected and demonstrated all the formulæ proposed by various geometers (Euler, Monge, Rodrigues Broschi), for the very useful problem of the "Transformation of Co-ordinates in Space," showing the relation and the geometric significance of the several systems of auxiliary variables adopted by those authors. Finally, amongst the mathematical researches may also be included a note by Schiaparelli on "The principle of the Arithmetic Mean in the calculation of Observations," and one by Prof. Porro, "On the new Cleps-cyclic Theodolite," an instrument invented by the author for rapid surveying.

*Hydraulics.*—The memoirs presented to the Institute under this head were chiefly of local interest, relating to the rivers and canals of Upper Italy. There is also one by Senator Lombardini, entitled "Geographical and Hydrological Researches in the Regions of the Upper Nile and Central Africa."

*Astronomy, Meteorology, and Terrestrial Physics.*—In a memoir entitled the "Variations of the Eccentricity of the Earth's Orbit, and of Terrestrial Climates in the Geological Epochs," Schiaparelli endeavours to prove that the changes of eccentricity in the orbit cannot be the cause of the great oscillations of temperature which have taken place in geologic epochs, and that the origin of the glacial periods must be sought elsewhere.—Prof. Cantoni, speaking of "The Rains of the Autumn of 1868 in Upper Italy," discusses the cause of the terrible inundations of that year. Cavalleri communicates an "Observation on the Aurora Borealis of the 13th of March, 1869," which was visible over a large part of Europe; and lastly, Prof. Rialti of Forli communicates a note "On the Cause of the Incandescence of Bolides," which gave occasion to Prof. Cantoni to make a calculation respecting the heat developed in bolides by the resistance of the air, analogous to those which had been made on the same subject by Reichenbach in Germany and Marsh in America.

*Physics.*—Prof. Cantoni has made a series of researches on "Frictional Electrical Machines," and especially that of Holtz; the "Theory of the Electrophorus and of Electro-static Induction," respecting which the author modifies essentially the ideas hitherto generally received; "The application of the Galvanometer to the study of electric phenomena," in which part of the research Cantoni was assisted by Prof. Brusotti of Pavia; "The relations between the variations of intensity of a current, and those of the temperature in a voltaic circuit;" and other subjects connected with the preceding.—The memoirs of Prof. Vilari relate to "The Influence of Magnetisation on the Electric Conductivity of Iron and Steel; the Currents induced between Iron and other Metals; the Heat developed by Caoutchouc when submitted to Traction;" and in association with Dr. Marangoni, on "The limits of perception of Sounds with respect to their duration."

*Chemistry.*—Prof. Polli, in examining the intimate mode of action of Sulphurous Acid and Alkaline Sulphites on Fermentable Organic Matters, has endeavoured to show that the mode of action of these preparations consists in an isomeric modification of the molecular aggregation, without alteration of the elementary chemical composition.—Prof. Selmi, of Mantua, has communicated his experiments on the miasmatic air of Mantua.

*Natural History and Geology.*—Under this head there are two botanical memoirs by Prof. Gorovaglio: one on a New Species of Sensitive Plant, cultivated in the Botanic Garden of the University of Pavia; the other containing a project for the establishment of a laboratory of Cryptogamic Botany, with the view of studying the maladies of plants and animals produced by cryptogamic parasites.—In connection with zoology, there is a note by Crivelli and Maggi on the *Corpora fibrinata* of the Frog, and another by Tigri, on the Silkworm Disease.—In Geology, Paolo Garini communicates a paper on a method of producing experimentally the phenomena of Glaciers.—Leopold Maggi communicates his researches on Lacustrine-glacial Deposits; and, lastly, Negri and Spreafico have presented a memoir on the Geology of the Environs of Varese and Lugano.

DIARY

THURSDAY, JANUARY 13.

ROYAL SOCIETY, at 8.30.—On the Mineral Constituents of Meteorites: Mr. N. S. Maskelyne.—On Fluoride of Silver: Mr. G. Gore, F.R.S.—Approximate Determination of the Heating Powers of Arcturus and a Lyrae: Mr. E. J. Stone, F.R.S.  
MATHEMATICAL SOCIETY, at 8.—Equation of Centres and Foci of certain Involutions: J. J. Walker.  
ZOOLOGICAL SOCIETY, at 8.30.  
LONDON INSTITUTION, at 7.30.

FRIDAY, JANUARY 14.

ROYAL ASTRONOMICAL SOCIETY, at 8.  
QUEKETT MICROSCOPICAL CLUB, at 8.

MONDAY, JANUARY 17.

ROYAL ASIATIC SOCIETY, at 3.  
ROYAL INSTITUTE OF BRITISH ARCHITECTS, at 8.  
MEDICAL SOCIETY at 8.

TUESDAY, JANUARY 18.

STATISTICAL SOCIETY, at 8.—On the Statistics of Joint Stock Companies from 1814 to the present time, and of Companies with Limited and Unlimited Liability formed since 1856: Prof. Levi.  
ANTHROPOLOGICAL SOCIETY, at 4.—Anniversary Meeting.  
ROYAL INSTITUTION, at 3.—On the Architecture of the Human Body: Prof. Humphry.  
PATHOLOGICAL SOCIETY, at 8.  
INSTITUTION OF CIVIL ENGINEERS, at 8.

WEDNESDAY, JANUARY 19.

METEOROLOGICAL SOCIETY, at 7.  
SOCIETY OF ARTS, at 8.

THURSDAY, JANUARY 20.

LINNEAN SOCIETY, at 8.—On the Flora of Iceland: Prof. Babington.—On New British Spiders: Rev. O. P. Cambridge.  
ROYAL INSTITUTION, at 3.—On the Chemistry of Vegetable Products: Prof. Odling.  
ZOOLOGICAL SOCIETY, 8.30 P.M.—Descriptions of a new genus and of eighteen new species of Eand and Marine Shells, Henry Adams. "On the genus Pelargopsis of the family Alcedinidæ," R. B. Sharpe. Description of a new Fish from the vicinity of Aden, Lieut.-Colonel R. L. Playfair.

BOOKS RECEIVED

ENGLISH.—Wonders of the Deep: M. Schele de Vere (Sampson and Low).—Anatomy of the Blowfly: B. T. Lowne (J. Van Voorst).—Journal of the Scottish Meteorological Society, to numbers.—Ancient Classics, Homer's Iliad: Rev. W. L. Collins (W. Blackwood and Sons).—Cups and their Customs (J. Van Voorst).—Geology and Revelation: G. Mulloy (Longman and Co.).—Across America and Asia: R. Pumpelly.—The Andes and the Amazon: James Orton (Sampson Low).  
AMERICAN.—Farming for Boys.—Our own Birds of the United States: W. L. Bailey (through Trübner and Co.).  
FOREIGN.—Die Technisch verwendeten Gummi-arten, Harze and Balsame: Dr. Julius Weisner.—Lehrbuch der Chemie: Dr. J. Moser.—Untersuchungen über die theorie und das allgemeine Geographische System der Winde: Dr. Adolph Mühy.—Anatomische Studien: Dr. C. Hasse.—Aufassung der Organischen Natur: Prof. Wilhelm His.—Untersuchungen über die microscopische Zusammensetzung und Structur der Basalt-gesteine: Dr. F. Zirkel.—Recherches pour servir à l'histoire naturelle des Mammifères; Livraison 5, feuilles 13 à 15: H. Miln-Edwards.

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ERRATUM.—The word "practical," in the 37th line on page 267, should have been "partial."