in which L, M, and N denote functions of x and y at once homogeneous, algebraic, entire, and of the same degree, by M. G. Fouret.—On the coefficient of contraction of elastic solid bodies, by M. Gros.—Analysis of some specimens of the air taken at Cape Horn by the Mission sent to observe the transit of Venus, by MM. A. Muntz and E. Aubin. The mean result of the analysis gave 20·864 as compared with 20·960, Regnault's mean for the atmosphere of Paris. The proportion of oxygen appears to be also very nearly equal to that of the air in various other parts of the globe, so that the variations in the quantities of nitrogen and oxygen in the whole terrestrial atmosphere seem to oscillate within very narrow limits, as was already shown by Regnault in the course of his memorable researches.—Action of gaseous hydrochloric acid on iron, by M. F. Isambert.—Fresh researches on the earthy alkaline manganites, by M. G. Rousseau.—On the reduction of compounds optically inactive by the process of compensation, by M. E. Bichat.—Observation in reference to M. Joly's note on the titration of the phosphoric acids by means of various indicators, by M. R. Engel.—Note on the formation of monatomic alcohols derived from the essence of turpentine, by MM. G. Bouchardat and J. Lafont.—On the action of the alcoholic chlorides on ammonia at a low temperature, and on the methylic amines, by MM. Camille Vincent and Chappuis.—Note on lesions of the alcoholic nevrite, by M. Gombault.—On the *Balanoglossus sarniensis*, by M. R. Kœhler.—On the morphology of the ovary in insects, by M. Ad. Sabatier.—Note on the nervous system of *Echinus acutus*, by M. Henri Prouho.—Note on *Diplosoma Kœhleri*, a new species of Diplosomian recently found in Guernsey, by M. F. Lahille.—On the quantities of heat liberated and absorbed by plants, by M. Gaston Bonnier.—Note on a nephelinic tephrite from the valley of the Jamma, kingdom of Shoa, by M. A. Michel Lévy.—Note on the basaltic rocks of the county of Antrim, Ireland, by M. A. Lacroix.—On the Egyptian decans, by M. Omont.

BERLIN

Physical Society, December 18, 1885.—Dr. Schulze-Berge spoke on the conduction of electricity in dielectric media, a subject which had hitherto been examined in most cases only from a technical standpoint, in order to determine the insulating power of gutta-percha sheathings for telegraph wires and cables. If it were assumed that the resistance of the dielectrics differed with the thickness of the layer according to the same law as prevailed in metals, then—seeing that the resistance of a cubic centimetre of gutta-percha was, in accordance with Jenkin's determinations, equal to 25×10^{12} ohm—the thickness of a layer, the resistance of which amounted to about 100 ohm, and ought to be measurable, must be so small as to be incapable of being produced. It might possibly be the case, however, that in dielectrics the resistance varied in another relation to the thickness, and in point of fact the speaker had found that a gutta-percha layer of 1/13 mm. thickness, and a superficies of 175 square c.m. inserted between two metal plates into the circuit of a Daniell's element connected to earth, produced a very rapid discharge. Measurements executed by the speaker by means of a quadrant-electrometer on thin layers of gutta-percha, sulphur, paraffin, and sealing-wax between two metal plates, yielded resistances very well capable of being measured, and which in the case of gutta-percha amounted on an average to about 200 ohm. In the case of sulphur the values varied between 20 and 2000 ohm, and just as varied and irregular were the resistances in the case of the two other substances. The layer offering resistance was produced by placing rubber tissue or purest flowers of sulphur on a heated plate of zinc, and thereupon pressing the second heated metal plate, after which the whole was allowed to cool. In the course of time the resistance changed. In the case of sulphur it increased, in the case of paraffin and sealing-wax, however, the resistance abated; in the case of gutta-percha the resistance continued pretty equal. If the cells supplying the current were disconnected, and the dielectric brought into conjunction alone with the electrometer, then the latter showed no deviation, whence it was inferred that the dielectric did not conduct electrolytically, and that it was no electrolytic polarisation which caused the change of resistance. The measurements of resistance were also taken with the aid of the Wheatstone bridge, and, after the former results had been confirmed by this method likewise, the influence of the electromotive force on the resistance of the dielectrics was determined. If the bridge system was in equilibrium, then must it remain unaltered when the intensity of the current was varied by the insertion of a changeable resistance into the circuit of the current. The experiment, however, showed that with the change in the strength of the current the needle of the galvanometer indicated a deflection. This change of resistance with the change in the strength of the current was, as the speaker had become convinced, by means also of the bridge combination, through disconnecting the chain, not caused by an electrolytic polarisation, but probably by a dielectric polarisation, which would have to be further investigated after other dielectrics, besides the four mentioned, had been tested. The most important results of his experiments were formulated by the speaker as follows:—(1) The resistance of the dielectrics varied in relation to the thickness of the layer in a different way from metals. (2) The conduction of the dielectrics was not electrolytical. (3) The resistance depended on the electromotive force.—In the discussion following this address, Dr. Schulze-Berge further stated that the sensitiveness of his electrometer was so great that a Daniell gave a deflection of 120°.—Prof. Schwalbe gave a full report of the two volumes on "Geophysik," by Herr S. Günther, published last and this year.

BOOKS AND PAMPHLETS RECEIVED

"Gurina im Obergailthal (Kärnthen)": A. B. Meyer (Hoffmann, Dresden).—"Das Gräberfeld von Hallstatt": A. B. Meyer (Hoffmann, Dresden).—"The Chemistry of the Coal-Tar Colours": R. Benedikt, translated by E. Knight (Bell and Sons).—"Der Schall": Dr. Elsas (Freytag).—"Photo-Relief Map of Scotland": H. F. Brion and Rev. E. McClure (S.P.C.K.).—"Flowers, Fruits, and Leaves": Sir J. Lubbock (Macmillan and Co.).—"Les Aérostats Dirigeables; leur passé, leur présent, leur avenir": B. de Grilleau (Dentu, Paris).—"Führer f. Forschungsreisende": F. F. von Richthofen (Oppenheim, Berlin).—"Tourist's Guide to the Flora of the Alps": Prof. K. W. v. Dallatorre (Sonnenschein and Co.).—"Hand-book of Mosses": J. E. Bagnall (Sonnenschein and Co.).—"The Laws of Nature": S. Cockburn (Sonnenschein and Co.).—"The Elements of Economics," vol. ii. part 1: H. D. McLeod (Longmans).—"Manual of Music": R. Dunstan (Hughes).—"Meteorologische Beobachtungen in Deutschland, 1883," Jahrgang vi. (Hamburg).—"Bulletin of the U.S. Geological Survey," Nos. 7 to 14 (Washington).—"Annual Report of the Comptroller of the Currency U.S., December 1, 1885" (Washington).—"Report of the International Polar Expedition to Point Barrow, Alaska": Lieut. P. H. Ray (Washington).—"On the Structure of the Brain of Sessile-Eyed Crustacea": A. L. Packard (Washington).

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