

in the same direction can be effected: the images are moving point-charges. Attention is drawn to the inequality of the action and reaction in some of these cases, and the results are shown to be consistent with expressions obtained for the energy of the field.—On some phenomena connected with the combination of hydrogen and chlorine under the influence of light, by Mr. P. V. Bevan. When light of sufficient intensity acts on a mixture of hydrogen and chlorine in equal proportions the first effect observed is an increase in the volume of the mixture. This is shown to be due to a rise in temperature caused by the heat evolved in the formation of hydrochloric acid. It is also shown that the fall in temperature of the gas mixture to that of the surrounding medium accounts for the observed decrease in volume after light ceases to act on the mixture.

MANCHESTER.

Literary and Philosophical Society, November 12.—Mr. Charles Bailey, president, in the chair.—Mr. W. B. Faraday showed a stone adze, one of several similar implements which have been found, from time to time, near Leek. He suggested a comparison with the Eolithic stone implements which were recently shown to the Society by Mr. R. D. Darbyshire.—Dr. Charles H. Lees described the Hampson air-liquefying apparatus presented to the physical laboratories of the Owens College by Sir Henry E. Roscoe. After explaining the principle on which the action of the apparatus depends, and describing the experiments of Joule and Thomson which led to the discovery of that principle, Dr. Lees gave a *résumé* of the present state of knowledge of the properties of liquid air and of other bodies when cooled down to the temperature of liquid air.

PARIS.

Academy of Sciences, November 11.—M. Bouquet de la Grye in the chair.—Extract from a letter of M. Jansson, noting the successful results of the eclipse expedition at Cairo (see p. 62).—On a new method of manipulating liquefied gas in sealed tubes, by M. Henri Moissan. Since solid carbonic acid can now be readily obtained, experiments were made with various liquids as solvents to see what temperatures could be reached, the evaporation being increased by a current of dry air. Of the liquids tried, methyl and ethyl alcohols, methyl chloride, aldehyde, acetic ether and acetone, the last named proved to be the best, a temperature of -98° C. being obtained by its means. If the current of dry air is previously cooled to -80° , the second mixture of acetone and carbon dioxide reaches -110° C. Details are then given of the best method of storing pure gases in the liquid form in sealed tubes, and of the precautions necessary.—On the action of the metal ammoniums upon hydrogen sulphide, by M. Henri Moissan. At a temperature between -75° and -70° liquid sulphuretted hydrogen reacts upon lithium-ammonium, giving a sulphide of lithium-ammonia and free hydrogen. The molecule $(\text{NH}_4)_n$, if it is produced in this reaction, is not stable at this low temperature and splits up into ammonia and hydrogen. The reaction with calcium-ammonium is similar.—On the origin of the starch in the grain of wheat, by MM. P. P. Dehérain and C. Dupont.—On the absence of electric displacement during the movement of a mass of air in a magnetic field, by M. R. Blondlot. The experiments described were undertaken with a view of deciding between two opposed theories. It was found that in air there is no displacement; this is contrary to the theory of Hertz on the electro-dynamics of bodies in motion, but is in agreement with the theory of H. A. Lorentz.—On rational differential equations, by M. Édmond Maillet.—On the number of roots common to several equations, by M. A. Davidoglou.—A new method for the study of microphonic currents, by M. A. Blondel. The amplitude of the oscillations is increased by a suitable resonator, and a bifilar oscillograph used giving deviations of several millimetres for one milliampere. A diagram of the curves obtained with the five vowels accompanies the paper.—On the formation of ozone, by M. A. Chassy. A given volume of oxygen was submitted in an ozoniser to a current of known intensity. It was found that the law of increase of ozone was the same whatever the intensity of the electric current. A feeble current always produced the same effect as an intense current, provided that it acted over a time sufficiently long, or that the flow of the gas was sufficiently slow.—The application to man of the regeneration of confined air by means of sodium peroxide, by MM. A. Desgrez and V. Balthazard. A description of the improvements in detail of an apparatus previously described.

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DIARY OF SOCIETIES.

THURSDAY, NOVEMBER 21.

ROYAL SOCIETY, at 4.30.—On Skin-currents. Part II. Observations on Cats: Dr. Waller, F.R.S.—The New Biological Test for Blood in relation to Zoological Classification: Dr. G. H. F. Nuttall.—On the Inheritance of the Mental Characteristics in Man: Prof. K. Pearson, F.R.S.—Observations on the Cerebral Cortex of the Ape (Preliminary Communication): A. S. F. Grünbaum and Prof. Sherrington, F.R.S.—On the Process of Hair Turning White: Prof. E. Metchinkoff, For.Mem.R.S.

LINNEAN SOCIETY, at 8.—Report on the Botanical Publications of the United Kingdom as a Part of the International Catalogue of Scientific Literature: B. Daydon Jackson.

CHEMICAL SOCIETY, at 8.—On the Oxidation of Sulphurous Acid to Dithionic Acid by Metallic Oxides: H. C. H. Carpenter.—Optically Active β -hydroxybutyric Acids: A. McKenzie.—On the Hydrochloride of Thiocarbamide: H. P. Stevens.—The Constituents of the Essential Oil of *Asarum Canadense*: F. B. Power and F. H. Lees.—Note on the Reduction of Trinitrobenzene and Trinitrotoluene with Hydrogen Sulphide: J. B. Cohen and H. D. Dakin.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—Presidential Address.

FRIDAY, NOVEMBER 22.

PHYSICAL SOCIETY, at 5.—(1) Multiple Transmission Fixed Arm Spectroscopes; (2) On the Measurement of Young's Modulus: Prof. W. Cassie.—Notes on Gas Thermometry, Part II.: Dr. P. Chappuis.

MONDAY, NOVEMBER 25.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30.—Four Years' Travel and Survey in Persia: Major Molesworth Sykes.—Dr. Vaughan Cornish will exhibit a Cinematograph Representation of the Severn Bore.

SOCIETY OF ARTS, at 8.—Chemistry of Confectioners' Materials and Processes: William Jago.

INSTITUTE OF ACTUARIES, at 5.30.—The Case for Census Reform: G. H. Ryan.

TUESDAY, NOVEMBER 26.

ANTHROPOLOGICAL INSTITUTE, at 8.30.—Exhibition of Palæolithic Implements from Savernake: E. Willett.—Exhibition of "Totem" Stones, collected by the Hon. A. Herbert; N. W. Thomas.—Dwarf Flints from the Sand Mounds of Samthorpe: Rev. R. F. Gatty.

INSTITUTION OF CIVIL ENGINEERS, at 8.—Train Resistance: John A. S. Aspinall.

WEDNESDAY, NOVEMBER 27.

SOCIETY OF ARTS, at 8.—Leather for Bookbinding: Dr. J. Gordon Parker.

THURSDAY, NOVEMBER 28.

ROYAL SOCIETY, at 4.30.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.

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