

hydrazine combined with two HCl: $C_2H_5NH-NH_2 \cdot 2HCl$.—R. Benedich has introduced into pyrogallol both one and two molecules of ethyl, obtaining pyrogallic ethers by heating pyrogallol with ethyl-sulphate of potassium and caustic potash in closed vessels.—P. Marquart proves that commercial nitric acid contains iodine, and thinks that the violet reaction of sulphuret of carbon observed by Dr. Friedburg may be owing to this element. The latter chemist contradicts this supposition.—O. Döbner has transformed diphenyl-sulphurous acid $(C_6H_5)_2SO_2H$ into a pphenol $(C_6H_4)_2(OH)_2$, a dicarbonic acid $(C_6H_4)_2(CO_2H)_2$, and a dichloride $(C_6H_4)_2Cl_2$. The latter by oxidation passes into dichlorobenzoic acid, thus proving that the two atoms of chlorine, &c., are contained in the same C_6H_4 group.—R. Meyer has transformed aniline-salts into aniline-black by treating them with permanganate of potassium.—P. Claessen recommends hydrate of baryta, prepared in a peculiar manner, for absorbing carbonic anhydride in quantitative analysis; separated by cotton-wool, some chloride of calcium is put into the tube to keep back the water discharged in the process. Numerous analyses prove its exactness.—T. Griess has treated nitrate of diazobenzol with ferrocyanide of potassium, transforming it thereby by reduction into a new substance, $C_{18}H_{14}N_2 = (C_6H_5N)_2C_6H_4$, and into azobenzol. This interesting discovery is most likely already known to English chemists.

STOCKHOLM

Academy of Sciences, Jan. 12.—The Academy approved a report by a Committee, consisting of Herr Edlund and Rubenson, appointed to consider a proposal by the Board of Woods for establishing meteorological stations for the purpose of scientific arboriculture.—Herr Nordenskjöld gave a sketch of the scientific results of last summer's expedition to the Jenesei.—Herr Edlund communicated a paper entitled "Some Remarks on Galvanic Expansion," in which he gave a theoretical explanation of the fact discovered by him some years ago, that a metal wire, through which a galvanic current passes, expands to a greater extent than corresponds to the heating caused by the current. He then exhibited a specimen of the newly-published Tables of Logarithms, which had been calculated and printed by the calculating machine invented by Dr. Wiberg.—Herr Andersson gave an account of the contents of a report by Herr J. E. Zetterstedt, of a journey he had undertaken last summer, with a grant from the Academy, for the purpose of examining the flora, and especially the mosses, of the Silurian formation of Wester Götland.—The following papers were given in for insertion in the Academy's publications:—Contributions to the actinology of the Atlantic Ocean, by Dr. G. Lindström; Examinations of the nucleus, and the parts nearest to it, of the Comet of 1874, by Dr. N. C. Dunér, of the University of Lund; On Arionids and Limacnids in the zoological department of Riks Museum, by the Intendent A. W. Malm; Remarks on the fossil flora of Bjuf, in Scania, by Dr. A. G. Nathorst. From the results of preliminary researches, the author concludes that the deposit must belong to the Rhaetic formation, as it contains *Palisya Braunii*, Endl., *Tarvopteris tenuinervis*, Brauns., *Pterophyllum acuminatum*, &c. He gives short notes on most of the species found, of which some have not hitherto been described. The locality has only two or three species in common with the flora at Polsjö, formerly described by the author, and he thinks that the fossiliferous beds at Bjuf represent a lower level, and most closely resemble those of Seinstedt.—On the reciprocal lines of force, by Dr. C. F. E. Björling, of Lund University.

PARIS

Academy of Sciences, Feb. 7.—M. Peligot in the chair.—The following papers were read:—On the chemical action produced by means of the discharges of an induction apparatus, by M. Becquerel. The effects are more marked than with the ordinary machine. With only two or four chromic acid couples, M. Becquerel obtained the reduction of copper, nickel, cobalt, &c., from paper moistened with their solutions. He also forms amalgams, following Davy's method.—Note on the metallic reductions produced in capillary spaces, by M. Becquerel. In organic nature, electro-capillary effects doubtless occur on rupture of vessels, e.g. of a vessel traversing a muscle. Here the blood is diffused and a coagulum is formed, which is in contact, on the one hand, with the blood; on the other, with the liquid moistening the muscle; hence a reducing or oxidising action, and the products formed may concur in closing of the aperture. M. Becquerel also explains the chemical reactions in capillary spaces when a voltaic couple is added.—On the formation of ethers, by

M. Berthelot. He here studies ethyloxalic, methyloxalic, acetic, and nitric ethers.—Report on a memoir of M. Peaucellier relating to the conditions of stability of arches.—Memoir on approximation of the functions of very large numbers, and on an extensive class of developments in series (first part), by M. Darboux.—New geometrical properties of the surface of the wave, which are interpreted by optics, by M. Mannheim.—On left curves of the fourth order, by M. Serret.—On the tunnelling operations in Mount Saint Gothard (continued), by M. Colladon. The compressing pumps employed give double the effect of those used in Cenis, and are only half the cost, while they occupy, with their motors, six or seven times less space. Four turbines at Goschenen and Airole work twelve pumps, and the air obtained at pressure of eight atmospheres is 1,000 cubic metres 'per hour. The pumps give 200 strokes per minute, night and day. The boring machines used are those of Dubois and François, Ferroux, MacKean, and Turretini.—On the repartition of solar radiation at Montpellier during the year 1875, by M. Crova. The intensity of radiation is shown to reach maxima in spring and winter, and the coefficient of transmissibility in Hérault, is found very considerable, exceeding sometimes 0.80 when the thickness already traversed is equal to 2.—On a new chloruretted propylene, by M. Reboul.—On difficulties connected with the preparation of pure aniline, by M. Rozenstiehl.—On the products of the action of chloride of lime on amines, by M. Tscherniak.—On granular conjunctivitis; *résumé* of two missions having for object the study of diseases of the eye in Algeria, by M. Gayal. The disease named is endemic in the region of the Tell and of Sahara. It is often developed through contagion with the secretion; and among local causes are the hot winds charged with sand, the solar reverberation, and the difference of temperature between day and night.—Crystallisation of meteoric waters, by M. Tissandier. In a drop of snow-water evaporated, a number of cross or dagger-shaped crystals are had; the form often taken by nitrate of ammonia in meteoric water. M. Tissandier tried in vain to reproduce such crystallisation artificially from dilute solutions of nitrate of ammonia; he always got crystals ramifying about a median line. He attributes the other form to presence of organic matters.—On the traces of dislocation presented by the tertiary formation in the valley of the Oise.

BOOKS RECEIVED

BRITISH.—Dr. Dobell's Reports on Diseases of the Chest. Vol. I, 1875 (Smith, Elder & Co.)—The Theory of Screws: Dr. R. S. Ball, F.R.S. (Hodges, Foster, and Co., Dublin).—Lessons from Nature: St. George Mivart, F.R.S. (John Murray).—Royle's Materia Medica. 6th edition. Edited by Dr. Harley (Churchill).—Cattle and Cattle-Breeding: Wm. McCoombe, M.P. (Blackwood and Sons).—Excavations at the Kesslerloch: Conrad Merck (Longmans).—Marsden's International Numismata Orientalia: Part II. (Trübner and Co.)—The Native Races of the Pacific States of North America. Vol. V.: H. H. Bancroft (Longmans).—Reliquiæ Aquitanicæ: Lartet and Christie (Williams and Norgate).

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