

In another paper the same workers show that hydrogen and chlorine do not explode when dry, unless exposed to very intense light.

Dr. A. P. Laurie gave some results of his researches on artists' colours. He is comparing the recipes given in the manuscripts of the old masters with those in modern use.

A new ferment was described on Tuesday, in a paper by Prof. P. F. Frankland, Miss Grace F. Frankland, and Mr. J. J. Fox. From the products of its activity, ethyl alcohol and acetic acid, it is termed *Bacillus ethaceticus*. It will cause a solution of mannite to ferment, while dulcitol is unaffected by it.

In his paper on the Constitution of the Aromatic Nucleus, Mr. S. A. Sworn gave preference to the octahedral formula of Thomsen. A further development of Thomsen's formula, he believes, affords a full explanation of the laws of para- and meta-substitution.

Dr. Isaac Ashe read a paper entitled "Dimidium: an Attempt to represent the Chemical Elements by Physical Forms." He put forward the view that the primordial basis is to be found in an element having half the combining weight of hydrogen. This hypothetical element is named dimidium. The relations of attraction and repulsion under the influence of polar force suggest a linear form for such a body. A series of vortex-rings, superposed one on the other, would yield a form elongated in one direction and limited in the other two. Having shown that the primordial element may have a bar-like form of definite length, the author proceeds to construct models of the different elements, conforming in each case to the combining weight, valency, crystalline form, &c.

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, September 30.—M. Des Cloizeaux, President, in the chair.—Presentation of the fourth sheet of the Bulletin of the International Committee for preparation of a map of the heavens; meeting of Committee at Paris Observatory, by M. E. Mouchez. Five other Observatories (Vienna, Catania, Mexico, Manilla, and the Vatican) have been added to the original sixteen. Each Observatory will have to take about 700 photographs in the zone allotted to it, and it is hoped to finish the work in three or four years. A central office for utilizing the results will be necessary.—Addition to the theory of thin weirs extending throughout the breadth of the bed of a water-course; calculation of variations in the contraction of the outflowing sheet at its lower face, by M. J. Boussinesq.—On the last communication of Halphen to the Academy, by M. F. Brioschi.—On the denomination of the industrial unit of work, by M. H. Resal. He advocates the unit of 100 kilogrammetres, to be called the *quintalmetre*.—On the application of high temperatures in observing the spectrum of hydrogen, by MM. L. Thomas and Ch. Trépiéd. The electric arc is found a sure and comparatively easy way of making hydrogen sufficiently luminous for spectroscopic observation, even with large dispersions; (four jets of the gas were made to converge conically towards an axis coinciding with that of the carbons).—On concatenation (*enchainement*) of the atomic weights of the elements, by M. Delauney. He shows that the atomic weights may be joined together by addition in each case of the square root of a whole number, which is variable, but always *harmonic* (not containing any other prime factors than 1, 2, 3, and 5).—Combinations of cupric oxide with amylaceous matters, sugars, and mannites; new reagents for proximate analysis, by M. Ch.-Er. Guignet. Solutions of cellulose, also dry starch, or inuline, give well-defined combinations with oxide of copper, when put in contact with its solution in ammonia. Some sugars (pure glucose from honey, galactose, &c.) quickly precipitate copper ammonio-sulphate (but not the oxide); and while inverted sugar does not precipitate the sulphate, a previous addition of glucose produces a deposit of the glucosic combination (which does not retain ammonia). Mannite and dulcitol, &c., yield at once blue precipitates in an ammoniacal sulphate of copper solution, which reagent is useful with decoctions of vegetable matters, as most substances in these are not precipitated by it.—On the number and calibre of nerve-fibres in the common oculomotor nerve, in the new-born and in the adult cat, by M. H. Schiller. The number does not increase during life (or increases very little); average 2942 in the kitten, 3035 in the cat. The calibre is increased six or eight times.—On the preceding investigation,

by M. Aug. Forel. Various researches point to the stability of the nervous elements during life, and this he regards as very important for explanation of the phenomena of memory.—On the vitality of trichinæ, by M. Paul Gibier. He submitted small pieces of fresh pork with numerous trichinæ (which were much more lively when brought out of their cysts into a water-heated vessel than those of the salt meat) to a temperature of 20° to 25° below zero, for about two hours, and found the animals, on reheating, as lively as before.—The innervation of the osphradium of mollusks, by M. Paul Pelseneer. Like the other sensorial organs of mollusks, the osphradium proves to be innervated by the cerebral ganglion.—On the *Spongeliomorpha Saportai*, a new Parisian species, by M. S. Menier.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

On the Causes, Treatment, and Cure of Stammering: A. G. Bernard (Churchill).—A Text-book of Physiology, 5th Edition, Part 2: M. Foster (Macmillan).—A Contribution to the Flora of Derbyshire: Rev. W. H. Painter (Bell).—Notes on the Pinks of Western Europe: F. N. Williams (West).—Watts' Dictionary of Chemistry, vol. ii.: M. M. P. Muir and H. F. Morley (Longmans).—The Microscope in the Brewery and Malthouse: C. G. Matthews and F. E. Lott (Bemrose).—An Epitome of the Synthetic Philosophy: F. H. Collins; Preface by H. Spencer (Williams and Norgate).—Watts' Manual of Chemistry, vol. i. 2nd edition: W. A. Tilden (Churchill).—Nature Stories, Myths, and Phantasies (Hamilton).—Prodromus of the Zoology of Victoria, Decade xviii.: F. McCoy (Trübner).—Service Chemistry: V. B. Lewes (Whittingham).—Chemical Technology; vol. i. Fuel and its Applications: E. J. Mills and F. J. Rowan (Churchill).—The Cradle of the Aryans: G. H. Rendall (Macmillan).—Thermodynamics of the Future, and Essays: S. Laing (Chapman and Hall).—Geological Record for 1880-84, vol. ii.: Edited by Topley and Sherborn (Taylor and Francis).—The Brook and its Banks: Rev. J. G. Wood (Religious Tract Society).—Memoirs and Proceedings of the Manchester Literary and Philosophical Society, 4th series, vol. ii. (Manchester).—Notes Biographiques sur J. C. Houzau: A. Lancaster (Bruxelles).—Notes on Indian Insect Pests, vol. i. No. 1 (Calcutta).—Das Australische Florenelement in Europe; Dr. C. Ettingshausen (Gray).—Onderhouden Trillingen van Gespannen Draden: H. J. Oosting (Helder De Boer).—Records of the Geological Survey of New South Wales, vol. i. Part 2 (Sydney, Potter).—Internationale Archiv für Ethnographie, Band ii. Heft 4 (Trübner).—Jahrbuch der k.k. Geologischen Reichsanstalt, Jahrg. 1889, xxxix. Band, 1 and 2 Heft (Wien, Holder).—The Photographic Quarterly, No. 1 (Hazell).—Bulletin of the United States National Museum, No. 37: W. H. Dall (Washington).—Aus dem Archiv der Deutschen Seewarte, xi. Jahrg., 1888 (Hamburg).—Mind, September (Williams and Norgate).—Bulletin of the United States National Museum, No. 35: H. Edwards (Washington).

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