obtained boiled at 137°, which is somewhat higher than that of the ordinary alcohol. The normal amylic chloride, bromide, iodide, and acetate have been prepared, all of which possess boiling points higher than those of the compounds obtained from the fermentation alcohol. Normal caproic acid was prepared from amyl cyanide in the same manner as the valeric acid previously described.—A translation of Rossi's paper "On the synthesis of normal propyl alcohol from ethyl alcohol," and also of T. Smith's paper "On the estimation of the alkalies in silicates" follow.—Tollens continues with the seventh contribution on the allyl group, the subject of which is the conversion of allyl alcohol into propyl alcohol; this is accomplished by treating allyl alcohol with solid potash, the temperature being gradually raised to 155°, hydrogen being evolved in the reaction; it was found extremely difficult to purify the propyl alcohol; to obtain conclusive evidence it was converted into propionic acid; some six or eight other bodies are formed in this reaction, such as formic acid, propionic acid, and other higher compounds.—Rinne and Tollens have succeeded in preparing allyl cyanide from the bromide by the repeated action of potassic cyanide, and have converted it into crotonic acid by the action of alcoholic potash; the crotonic acid obtained fused at 72°, and possessed all the properties of crotonic acid as made from allyl cyanide prepared from mustard-oil. By the oxidation of allyl alcohol by chromic acid the authors have obtained formic acid, and small quantities of acrylic acid, no acetic acid being produced.—Fittig contributes a paper "On the alleged dibasic nature of gluconic and lactic acids," being a reply to Hlasiwetz's paper on this subject, Fittig himself considering them monobasic.—The continuation of a paper "On the action of Sulphurous Acid on Platinic Chloride," by K. Birnbaum, follows, several new and complicated salts of this series have been obtained; the reactions seem to proceed in two stages, first a reduction to platinous chloride takes place, and then the substitution of Cl by HSO_3; thus by the action of hydric ammonic sulphite on ammonic chloroplatinate a body of the composition $Pt\begin{matrix}Cl\\HSO_3\end{matrix}\begin{matrix}NH_4\\H\end{matrix}So_3 + 4\,H_2O$ is obtained.—This number concludes with two short papers by J. Myers. The first is "On the temperature of decomposition of sulphuretted hydrogen," this is placed between 350° and 400°, probably nearer the lower temperature; the second paper is "On sulphuretted hydrogen containing arsenic." Sulphuretted hydrogen, as usually prepared from impure sulphuric acid and ferrous sulphide, contains a gaseous arsenic compound, probably arsenetted hydrogen; the two gases do not react on each other at ordinary temperatures, but when they are heated to the boiling point of mercury, a deposit of arsenious sulphide takes place. The arsenetted hydrogen is probably produced by the action of nascent hydrogen on the arsenic compound existing in the sulphuric acid.

SOCIETIES AND ACADEMIES

LONDON

Royal Microscopical Society, November 1.—W. Kitchen Parker, F.R.S., president, in the chair. Dr. Braithwaite, F.L.S., contributed further remarks on the structure of the Sphagnaceæ or bog-mosses. Confining himself principally to the characters for grouping the numerous species into sub-genera, he advocated the system adopted by Dr. Lindberg of Stockholm, based upon those yielded by the form of the leaves investing certain portions of the stem and divergent branches.—Mr. W. Saville Kent, British Museum, read a paper on Prof. James Clark's Flagellate Infusoria with description of new species. In his communication, Mr. Kent announced the discovery among others of Prof. Clark's minute "collared" types (*Codosiga*, *Bicosœca*, &c.), first made known to the scientific world through the Memoirs of the Boston Society of Natural History for 1866, but not since corroborated by any European naturalist. Of the eleven species noticed by Mr. Kent, five were identified by him with American forms; the remaining six, while referable to corresponding genera, offering well-marked specific distinctions. The whole series are of exceedingly minute size, requiring a magnifying power of 800 diameters and upwards for the recognition of their structural peculiarities, the chief interest attached to them being their striking resemblance to the ultimate cell particles lining the incurrent cavities of sponges, as clearly shown by Prof. Clark in the calcareous, and since demonstrated by Mr. Carter in the siliceous groups. Mr. Kent expressed his dissent from Prof. Clark's views in regard to the nutritive functions of *Monas* and other Flagellata, in the course of his investigations, he having observed the former to engulf food at any portion of its periphery, after the manner of *Amœba*, while in the collar-bearing species, it was intercepted at any portion within the area circumscribed by the base of that organ, there being in no case a distinct mouth as assumed by Prof. Clark. In the discussion that ensued, Mr. Kent assented to the President's suggestion, that the Flagellata, in the possession of one or more lash-like appendages, represented a higher type of organisation than the Foraminifera, and other Rhizopodous Protozoa; and expressed his opinion that the Spongiadæ, as a class, combined the structural characters of the ordinary Rhizopoda and lower Infusoria, having superadded to this a skeletal and aggregated type of organisation essentially their own. Mr. C. Stewart affirming to having observed an appearance of three flagellate appendages to certain cells of *Leucosolenia botryoides* under a magnifying power of about 300 diameters, Mr. Kent accepted his statement as further corroboration of the existence of a membranous collar, which, under an insufficient degree of magnification, presents the aspect attested to by Mr. Stewart. The entire series of Infusorial forms recorded in Mr. Kent's communication were obtained by him from a pond on the estate of Mr. Thos. Randle Bennett, Wentworth House, Stoke Newington.

Entomological Society, November 6.—Prof. J. O. Westwood, F.R.S., vice-president, in the chair. Mr. Davis exhibited a collection of larvæ of Lepidopterous and other insects, beautifully preserved by inflation. Mr. Bond exhibited examples of *Zygæna esculans*, a new British moth, captured by Dr. Buchanan White in Braemar, and *Catocala Fraxini*, recently captured in the Regent's Park; also a singular variety of *Chærocampa elpenor*, in which the central portion of each fore-wing was hyaline.—The Rev. A. Matthews sent for exhibition specimens of *Throscus carinifrons* and *Cryphalus tibiæ*, new, or recently discovered, British Coleoptera.—Mr. M'Lachlan exhibited *Bittacus apterus* from California, recently described by him in the *Entomologists' Monthly Magazine*.—Mr. Howard Vaughan exhibited the dark form of *Triphæna orbona*, from Scotland, known as *T. Curtisii*, and Mr. Lewis made some remarks on the synonymy of this form. Mr. Vaughan also exhibited a nearly black variety of *Arge Galathea*, captured in Kent by Mr. Tarn.—Mr. Miller exhibited an enormous oak-gall from America; also impregnated and unimpregnated eggs of *Libellula flaveola*.—Prof. Westwood exhibited numerous examples of *Formica herculeana*, a gigantic ant not hitherto known as British, found in the proventriculus of an example of *Picus martius*, said to have been shot near Oxford; from the perfect condition of the ants and of the bird which had devoured them, he fully believed in the genuineness of the bird as a British example, an opinion which was not shared by some of the members present. Prof. Westwood also exhibited two male examples of *Papilio Crino* from Ceylon, in one of which some of the veins of the wings were coated with brown hairs, a usual character with the males of some species of *Papilio*, but which had not hitherto been observed in that of *Crino*.—Mr. F. Smith exhibited a *Noctua*, apparently belonging to the genus *Aplecta*, which had been taken alive by Mr. Gwyn Jeffreys at sea, 220 miles from Nova Scotia.—Baron Chandois communicated notes commenting upon Mr. Wollaston's remarks respecting *Eurygnathus parallelus*, a Madeiran beetle described by him, and maintaining its distinctness from *E. Latreillei*.—Mr. Briggs read a paper "On *Zygæna Trifolii* and allied forms," detailing the result of his observations during many years, and arriving at the conclusion that two distinct forms or species had hitherto been confounded in Britain under the name of *Trifolii*.

Linnean Society, November 2.—Mr. G. Bentham, president, in the chair. Sir John Lubbock, Bart., read a paper "On the Origin of Insects," an abstract of which will be found in another column. An interesting discussion followed, in which Mr. George Busk, Mr. A. R. Wallace, Mr. M'Lachlan, Mr. Stainton, and Mr. B. Lowne, took part.—Captain Chimmo, "Notes on the Natural History of the Flying Fish." The author considers that he has established that during flight there is an extra consumption of oxygen by the fish, as shown by an increase of temperature. He finds that life is maintained for a period of from seven to nine minutes out of the water, and states that the fish possesses the power of changing the direction of its course during flight, using its tail as a rudder.

CHESTER

Society of Natural Science, October 25.—President, Rev. Canon Kingsley; treasurer, Mr. Kinsman; hon. secretary, Mr. Manning. The society is divided into three sections: (1) botany, (2) geology, (3) zoology; and numbers nearly 200 members. Mr. Alfred O. Walker read a paper on "Objects and Organisation of Local Natural History Societies."

GLASGOW

Geological Society, October 19.—Mr. Edward A. Wünsch, vice-president, in the chair. The Annual Report and abstract of the accounts for past year showed the society to be in a flourishing condition. — Mr. James Thomson, F.G.S., read a paper "On the Plagiostomous Fishes of the Coal Measures," particularly *Orthacanthus Dechenii* Goldfuss. He observed that Prof. Agassiz, in his "Poissons Fossiles" published in 1837, described the genus *Diplodus* (sp. *gibbosus* and *minutus*) from specimens, chiefly of dissociated teeth, found in the English coal-fields. Subsequently, a well-preserved fish was discovered in Bohemia, and described in 1847 by Goldfuss, who named it *Orthacanthus Dechenii*. In 1848, Prof. Beyrich, of Berlin, described the same fish, and named it *Xenacanthus Dechenii*, founding on the fact that the spine had a greater similarity to *Pleuracanthus* than to *Orthacanthus*. At the meeting of the British Association in Glasgow in 1855, Sir Philip Egerton, from discoveries that had been made in the interval, pointed out that the spines of *Pleuracanthus* and the teeth of *Diplodus* belonged in fact to the same fish. The specimens from which Sir Philip proved this to the Association were obtained from Carluke and Edinburgh. In 1867 Prof. Kner went carefully over the remains of such fishes in the museums of Dresden, Berlin, Breslau, and Vienna. Although none of the specimens found in these museums were complete, yet in some of them he found the teeth of *Diplodus minutus* of Agassiz in position, and from the external aspect of the fossils he accepted Goldfuss's generic name, *Orthacanthus Dechenii*. The specimen which Mr. Thomson now exhibited had been for many years in his collection, and had been provisionally named *Pleuracanthus minutus*. After a careful examination, however, of the microscopic structure both of the teeth and the shagreen, he could find no relation between the structure of *Pleuracanthus* and that now exhibited. In the meantime he accepted Prof. Kner's identification, but thought it possible that the discovery of better-preserved specimens would show that the difference of structural character might be due to difference of sex, as he had found to be the case in the recent rays' jaws of *Raia clavata*, both male and female, with the teeth in position, exhibited in support of this view.

PARIS

Academy of Sciences, October 30. — M. P. A. Favre read a continuation of his researches upon the thermal phenomena of electrolysis, containing an account of his investigations upon alkaline bases and sulphates; M. Wurtz presented the continuation of a paper, by M. G. Salet, on the spectra of phosphorus and of the compounds of silicium; and M. Le Verrier communicated a note by M. Diamilla-Müller, on a series of simultaneous magnetic observations which it is proposed to make in various parts of the surface of the globe, on the 15th of October, 1872. This note is accompanied by a table of the absolute magnetic declinations calculated for the above date, at a great number of places in all parts of the eastern hemisphere. —MM. Dumas and Chevreul and General Morin discussed the right of Daguerre to be regarded as the inventor of photography, and asserted the prior claims of Niepce de Saint-Victor.—M. Faye read the conclusion of his memoir on the history and present state of the theory of comets.—M. Delaunay presented a note by M. G. Leveau, giving the elements of the planet Hera (103).—A note was read by M. Barbe, on the uses of dynamite. —M. E. M. Raoult read a note on the transformation of dissolved cane-sugar into glucose, under the influence of light. The exposure lasted from May 12 to October 20.—M. Berthelot communicated the third part of his investigations of the ammoniacal salts, in which he discussed the reciprocal actions of the salts of ammonia and of the other alkalies.—A note was read by MM. A. Scheurer-Kestner and C. Meunier, on the composition and heat of combustion of two Welsh coals (from Bwlf and Powel.)—M. Daubrée communicated a paper on the deposit in which phosphate of lime has lately been discovered in the departments of Tarn-et-Garonne and the Lot.—M. A. Damour presented a note on an idocrase from Arendal, in Norway, containing an analysis of the mineral, and also an analysis of a garnet from Mexico.—M. E. Blanchard communicated a note by M. S. Jourdain, on the reproduction of *Helix aspersa*, in which the author described the arrangement of the reproductive organs and the mode in which their products are brought together.

BOOKS RECEIVED

ENGLISH.—The Letters of J. B. Jukes: Edited by his Sister (Chapman and Hall).—A Handbook of the Mineralogy of Cornwall and Devon: J. H. Collins (Longmans).—A Manual of Anthropology, or Science of Man: C. Bray (Longmans).—Note-book of Practical and Solid Geometry: J. H. Edgar (Macmillan).—The Admiralty Manual of Scientific Inquiry, 4th edition: Rev. R. Main (J. Murray).—Proceedings of the South Wales Institute of Engineers; Vol. vii, Nos. 2–4.—Insects at Home, being a popular account of British Insects: Rev. J. G. Wood (Longmans).

AMERICAN.—Three and Four place Tables of Logarithmic and Trigonometric Functions: J. M. Peirce (Boston, Ginn Brothers).—Seaside Studies in Natural History; Marine Animals of Massachusetts Bay, Radiates: Elizabeth C. Agassiz and Alexander Agassiz (Boston, J. R. Osgood and Co.).

FOREIGN.—(Through Williams and Norgate)—Lehrbuch der anorganischen Chemie: Dr. Th. Ph. Büchner; 1te Abtheilung.—Wöhler's Grundriss der organischen Chemie: Dr. R. Fittig; 8te Auflage—Die Zielpunkte der physikalischen Wissenschaft: E. Hagenbach.—Astronomische Tafeln u. Formeln: Dr. C. F. W. Peters.

DIARY

THURSDAY, NOVEMBER 9.

LONDON MATHEMATICAL SOCIETY, at 8.—On the Partition of an Even Number into two Primes: J. J. Sylvester, F.R.S.—General Meeting; Election of Council and Officers.

SUNDAY, NOVEMBER 12.

SUNDAY LECTURE SOCIETY, at 4.—Education in India: Jiram Row.

MONDAY, NOVEMBER 13.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30.

LONDON INSTITUTION, at 4.—On Elementary Physiology (III.): Prof. Huxley, F.R.S.—Nervous Matter; its Structure and Properties: Prof. Huxley, F.R.S.

THURSDAY, NOVEMBER 16.

LONDON INSTITUTION, at 7.30.—The Influence of Geological Phenomena on the Social Life of the People: Harry G. Seeley, F G.S.

ROYAL SOCIETY, at 8.30.

LINNEAN SOCIETY, at 8.—On the Floral Structure of Impatiens fulva, &c.: A. W. Bennett, F L S.—Remarks on Dolichos uniflorus: N. A. Dalzell.—Floræ Hongkongensis Supplementum: H. F. Hance, Ph. D.

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