of Bacillariæ in the high lands of California, in which he noticed the occurrence of great beds consisting wholly of Diatomaceæ in various parts of the Californian territory.—M. Weierstrass presented a memoir by M. Ketteler on the influence of ponderable molecules upon the dispersion of light, and upon the import of the constants of the dispersion formulæ.

February 17.—The papers read at this meeting were chiefly of historical or antiquarian interest, but they included an important contribution to the history of algebra in Germany, by Prof. Gerhardt, of Eisleben.

February 24.—Prof. A. W. Hofmann read a paper on the preparation of the ethylamines on the large scale. The author finds that the most volatile of the subsidiary products of the manufacture of chloral, if condensed and digested at 212° F. with a strong alcoholic solution of ammonia, furnishes, by a simple subsequent treatment described by him, a considerable proportion of hydrochlorates of the amine bases, which may be isolated by the addition of concentrated solution of soda. Professor Hofmann also read some supplementary remarks upon the products of the desulphurisation of diphenylosulphocarbamide.

German Chemical Society, April 11.—Two papers by L. Carius were communicated. The first describes a new method of preparing dibrominated acetic ether, by the action of bromine on acetic ether. The second announced new syntheses of maleic and phenaconic acids, by the use of disodic acetic ether, C H Na_2 C O O C_2 H_5 on bibromoacetic ether, and on bibromosuccinic ether.—Messrs. Schneider and Erlenmeyer have investigated normal iodopropionic acid. Treated with acetate of silver, this acid yields acetoxypropionic acid.—L. Fleury publishes researches on new derivations of allyle, viz.: C_3 H_5 Cl_2 N O_2, C_3 H_5 I Cl_2 and C_3 H_5 O H H Cl O.—A. Ladenburg has discovered a distannic ethide, Sn_2 $(C_2 H_5)_6$. The vapour density serving to establish the formula of this compound was taken by Hofmann's method, the constant temperature being produced by distillation of oil of cloves. Chlorine and iodine separate the molecule producing

$$Sn\,(C_2 H_5)_3\,Cl, \text{ or } Sn\,(C_2 H_5)_3\,I.$$

C. Liebermann reported on an easier method patented by himself, in conjunction with Messrs. Graebe and Caro, for preparing artificial alizarine. Instead of brominating anthracene they treat it with sulphuric acid. According to the quantities employed, either one, two, or three atoms of hydrogen are replaced by the group HSO_4. C_{14} H_8 $(SO_3H)_2$ fused with potash yields C_{14} H_8 $(OH)_2$, and this is oxydised into alizarine C_{14} H_6 $(HO)_2$ O_2. Or they transform anthracene C_{14} H_{10} first into anthrachinone C_{14} H_8 O_2, and treat this substance with sulphuric acid. The compound C_{14} H_6O_2 $(HSO_4)_2$ may then be transformed by fusion with potash into C_{14} H_6O_2 $(OH)_2$. The compound C_{14} H_5 O_2 $(HSO_4)_3$ is transformed by this process into purpurine. A process lately patented by Bronner and Gubzkow for preparing alizarine was then severely criticised by Mr. Liebermann; this process, consisting in fusing anthrachinone with potash, yields only a trace of a blue colouring matter, but no alizarine. He intends to return to this subject.—Professor Rammelsberg reported on the action of periodic acid on the oxides of thallium. Protoxide of thallium treated with periodic acid is partly converted into the iodate, and partly into peroxide of thallium. Sesquioxide of thallium, on the contrary, combines with periodic acid.—V. Meyer has continued his researches on the synthesis of organic acids, by treating sulpho-salts with formiates. Sulphonaphthalate of potassium, when fused with formiate of sodium, produces acid sulphite of potassium and naphtalinecarbonate of sodium. Chlorosalylate of potassium treated in the same way, however, yields chloride of potassium and benzoate of sodium.

April 25.—Messrs. Krämer and Pinner have continued their researches on aldehyde by submitting it to the action of chlorine-gas. Conducted in this way, the reaction takes place in a different manner from that described by Wurtz, who, pouring an excess of aldehyde into large vessels filled with chlorine, obtained chloride of acetyle and its compound with aldehyde. Neither of these substances has been obtained by Messrs. Krämer and Pinner. Nor is ordinary chloral obtained by this reaction, the aldehyde being entirely converted into the chloral of the condensed aldehyde, C_4H_6O, known as crotonic aldehyde. Crotonic chloral is a liquid, boiling at 165°, and forming with water, but not with alcohol, a crystalline compound. By oxydation it forms trichlorocrotonic acid. Caustic potash transforms it into the corresponding chloroform C_3 H_3Cl_3 and its derivative C_3 H_2 Cl_2 (bichlorinated allylene?) boiling at 78°.—C. Martius has studied the combinations of chloral with alcohols. Amylic alcohol forms with it a beautifully crystallised compound. Mercaptans also combine with chloral.—F. Rüdorff communicated a method of determining with great exactness the quantities of pure glacial contained in acetic acid of different degrees of concentration. It is founded on the melting-points of pure acetic acid (16°·7 C.) and its mixtures with water. Commercial glacial acetic acid contains often as much as 10 per cent. of water, and then melts at 10°·3 C., or even 15 per cent., and then melts at—0°·2.

DIARY

THURSDAY, MAY 12.

ROYAL SOCIETY, at 8.30.—On the Results of the method of investigating the Nervous System, more especially as applied to the elucidation of the Functions of the Pneumogastric and Sympathetic Nerves in Man: Dr. A. Waller (Croonian Lecture).

SOCIETY OF ANTIQUARIES, at 8.30.—On recent Discoveries at Rome: J. H Parker.

MATHEMATICAL SOCIETY, at 8.—Mechanical description of a nodal bicircular Quartic: Prof. Cayley.

ZOOLOGICAL SOCIETY, at 8.30.—Notes on some points in the Anatomy of certain Kingfishers: Dr. Cunningham.—On the taxonomic characters afforded by the muscular sheath of the œsophagus in Sauropsida and other Vertebrates: Mr. George Gulliver.—Notes on the myology of *Platydactylus Japonicus*: Mr. Alfred Sanders.—On the Hirundinidæ of the Ethiopian region: Mr. R. B. Sharpe.

ROYAL INSTITUTION, at 3.—Electricity: Prof. Tyndall.

FRIDAY, MAY 13.

ROYAL INSTITUTION, at 8.—Descent of Glaciers: Rev. Canon Moseley.

ROYAL ASTRONOMICAL SOCIETY, at 8.

QUEKETT MICROSCOPICAL SOCIETY, at 8.

SATURDAY, MAY 14.

ROYAL INSTITUTION, at 3.—Comets: Prof. Grant.

MONDAY, MAY 16.

LONDON INSTITUTION, at 4.—Botany: Prof. Bentley.

TUESDAY, MAY 17.

INSTITUTION OF CIVIL ENGINEERS, at 8.—Discussion upon Mr. Briggs paper on Rotary Fans.—On Recent Improvements in Regenerative Hot Blast Stoves for Blast Furnaces: Mr. E. A. Cowper.

ROYAL INSTITUTION, at 3.—Moral Philosophy: Prof. Blackie.

ANTHROPOLOGICAL SOCIETY, at 8.—Music considered as a Racial Characteristic: Mr. H. F. Chorley.

STATISTICAL SOCIETY, at 8.—On the incidence of Local Taxation in the United Kingdom: Prof. Thorold Rogers.

THURSDAY, MAY 19.

ROYAL SOCIETY, at 8.30.

SOCIETY OF ANTIQUARIES, at 8.30.

ROYAL INSTITUTION, at 3.—Electricity: Prof. Tyndall.

CHEMICAL SOCIETY, at 8.—On some Bromine Derivatives of Coumarine: W. H. Perkins, F.R.S.

BOOKS RECEIVED

ENGLISH.—Other Worlds than ours: R. A. Proctor (Longmans.)—A New Manual of Logarithms; Dr. Bruhns (Williams and Norgate.)—Donkin's Acoustics (Macmillan.)—Thorell on European Spiders, Part 1 (Williams and Norgate.)

FOREIGN (through Williams and Norgate).—Baron Von der Decken's Reisen in Ost-Afrika; 4ter Band, Die Vögel Ost-Afrikas.—Beiträge zur vergleichenden Anatomie und Histologie der Ohrtrompete: Prof. Ridinger.—Die Reinigung und Erwässerung der Stadt Heidelberg: Prof. Friedreich.—Deutsche Vierteljahrsschrift für offentliche Gesundheitspflege; 2er Band, 1tes Heft.—Baillon's Histoire des plantes, Papilionacées: Zeitschrift für Parasitenkunde, Vol. 1.—Untersuchungen aus dem Institute für Physiologie und Histologie in Graz: A. Rollett.—Etude préhistorique sur la Savoie: A. Perrin.—Die Fische Deutschlands und Schweiz: J. C. Weber.—Grundriss der Physiologie des Menchen: Dr. L. Hermann.—Annalen der Oenologie 1er Band 2tes und 3tes Heft.—Beiträge zur Anatomie und Physiologie: C. Eckkard.

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