SCIENTIFIC SERIALS.

American Journal of Science, October.—Recent progress in optics, by W. Le Conte Stevens. This paper was read before the American Association, and gives an admirable summary of Michelson's work with the interferential comparer, of Wiener's experiments with stationary light waves, of recent researches on luminescence, and other subjects.—The quantitative determination of perchlorates, by D. A. Kreider. The method is essentially the collection of the oxygen of the perchlorate; its subsequent passage into an atmosphere of nitric oxide over a strong solution of hydriodic acid, and the titration of the iodine thus liberated with decinormal arsenic in alkaline solution. The apparatus employed consisted of a piece of combustion tubing, 10 or 12 cm. in length, drawn out at one end and connected with a receiver filled with caustic potash. A platinum boat carried the perchlorate, which was covered with a mixture of sodium and potassium carbonates. The tube was then filled with carbonic acid, and then the oxygen was evolved by fusion. The oxygen was swept by a current of CO_2 into a receiver consisting of two levelling bottles. For the action of the oxygen on hydriodic acid through the medium of nitric oxide, a bulb pipette was used with stopcocks at both ends. This was filled with a known amount of hydriodic acid, and the air expelled by CO_2, after which it was exhausted and a small quantity of nitric oxide was admitted. Then the oxygen was allowed to enter slowly under the diminished pressure, while the bulb was constantly shaken. It was then removed for titration.—Demonstration of caustics, by R. W. Wood. A strip of thin polished steel is bent into an arc formed by pins stuck on a board. A piece of cardboard is placed across the opening of the arc, and slits are cut in it about half an inch apart. A piece of photographic sensitive paper is stuck on a board inside the arc. On directing the apparatus towards the sun, parallel rays are traced from the slits to the mirror, and also their reflections, and the latter form the caustic surface appropriate to the curvature of the mirror.—The law of electromagnetic flux, by M. I. Pupin. The author endeavours to show the exact position which this law occupies in Maxwell's electromagnetic theory; to point out its limitations; to show that Maxwell's electromagnetic theory of light demands a more general form of this law; and to present a general form of this law of which the forms given up to the present are special cases.

American Meteorological Journal, October.—Fog signals and meteorology, by Prof. H. Hazen. The author discusses the penetrating power of various signals, the conditions under which fog is formed, and the effects of the winds and topography upon the audibiity of the signals. He considers that, apart from the facts that a sound can be heard about twice as far with the wind as against it, and can be heard farther from an elevation than at the level of the sea, there is hardly a point which is well established. Also that the evidence points very strongly against the use of sirens or trumpets in any but a few exceptional cases where a very long range is demanded. A perplexing difficulty, referred to by the late Prof. Henry, arises from the fact that the signal often seems to be surrounded by a belt, varying in width from one to one and a half miles, from which the sound appears to be entirely absent. He considers that there is urgent need for a series of experiments from a rock or very low island, with open water for ten miles on all sides. Such experiments would probably elucidate many of the perplexing phenomena which now exist.

SOCIETIES AND ACADEMIES.

LONDON.

Entomological Society, October 16.—Prof. Meldola, F.R.S., President, in the chair.—The President announced the deaths of Prof. C. C. Babington, F.R.S., the last but one of the original members of the Society, and Prof. C. V. Riley, one of the ten Honorary Fellows of the Society, and commented upon their scientific work. Mr. W. F. H. Blandford spoke at some length on the valuable services rendered by the late Prof. Riley to the cause of economic entomology, and referred to the enormous number of papers and memoirs on the subject which he had contributed. Lord Walsingham, F.R.S., also spoke as to the importance of the late Prof. Riley's work and the respect and regard which he felt for his estimable personal qualities.—Mr. F. C. Adams exhibited a series of nineteen *Merodon equestris*, containing several varieties, showing their resemblance to wild bees of the family Apidæ, and made a few remarks on mimicry. He also exhibited specimens of *Leptomorphus walkeri*, Curt., taken in the New Forest in September last, and *Melanostoma hyalinatum*, Fln. (male and female), also taken in the New Forest in the latter part of August last. Mr. Verrall, Dr. Sharp, F.R.S., and Colonel Yerbury made some remarks on the species and their distribution.—Mr Enock exhibited, and made remarks on, specimens of the mature male and female, and the nest of *Atypus piceus*, the British Trap-door spider; also male and female specimens of *Andrena atriceps* and males of *A. fulva*.—Mr. Tutt exhibited a long series of 143 males and 25 females of *Erebia nerine*, captured in the Tyrol, partly in the Mendel Pass and partly in the Val d'Ampezza, and read notes on the species, in which he criticised the description of it, and the published observations as to its habits, by Dr. Lang, Mr. Elwes, and others. Mr. Elwes made some remarks in reply.—Lord Walsingham exhibited the type of *Pseudodoxia limulus* (Rghfr.), together with the larval cases and a preserved larva. He directed attention to the curious truncate concave head of the larva which forms an operculum to the tube, and remarked that the cases of this insect, which were apparently not uncommon in Ceylon, the larva feeding on mosses and lichens, had been known for some considerable time. So long ago as 1864, Mr. McLachlan found them in the British Museum collection of cases of caddis worms, and at that time, being only acquainted with the case, he was disposed to consider them the work of one of the *Leptoceridæ*. In 1889, Herr Rogenhofer gave the name *Fumea (?) limulus* to the case and its contents, and Mr. McLachlan agreed from the evidence then adduced that the insect was *Lepidopterous* rather than *Trichopterous*.—Mr. C. J. Gahan exhibited, for Mr. Turner, an imago and some larval forms of *Ledra aurita*, Linn.—Mr. G. C. Griffiths exhibited, and read notes on, hybrids between *Platysamia cecropia* (male) and *P. gloveri* (female), and between *P. cecropia* (male) and *P. ceanotha* (female); also between *Actias luna* (male) and *A. selene* (female).. He stated that these hybrids were bred by Miss Emily L. Morton, of New Windsor, New York, in 1891, 1892 and 1893.—Lord Walsingham stated that at the last meeting of the Society some discussion ensued, after the reading of his paper, in consequence of his having alleged that *Grapholitha*, W., was preoccupied by *Grapholitha*, Hb. (Verz. Schm.), and he read a supplementary note on the subject explaining the references in his paper.—Dr. A. G. Butler communicated a paper, entitled "Notes on seasonal dimorphism in certain African butterflies."

PARIS.

Academy of Sciences, October 28.—M. Marey in the chair.—The Associates and Correspondents of the Academy are invited to send their photographic portraits to the Secrétariat to form part of a projected album.—Lord Kelvin read an address from the Royal Society of London, and then expressed his appreciation of the honour conferred upon him by his election as a Foreign Associate of the Academy. In his speech he referred to France as his *Alma mater* in science, and mentioned his personal connection with Regnault in 1854 at the Collège de France.—On the multiple roots of algebraical equations, by M. Brioschi.—On the differences of longitude between Nice, Ajaccio, and Rousse Island, by MM. Hatt, Driencourt, and Perrotin. A telegraphic determination in which observations have been carried out between different pairs of observers, and checked by comparing the longitude of Ile Rousse determined from Nice with the longitude of the same place determined from Ajaccio, which itself had its longitude compared directly with that of Nice. The direct determination of the difference in longitude of Ile Rousse and Nice gave 6m. 34·45s. ± 0·01s. Indirect determinations gave 6m. 34·442s. ± 0·019s., and 6m. 34·465s. ± 0·017s.—M. Armand Gautier presented the second volume of the second edition of his "Cours de Chimie," and described the points in which it differed from the first edition.—General A. de Tillo presented and described a relief map of the western part of Russia, and the bordering parts of contiguous States.—On chemical equivalents, by M. Marqfoy. The author enunciates the following as a law of chemistry, and supports it by tables printed in the abstract: "The actual equivalents of chemistry are the prime numbers comprised in the natural series of whole numbers from 1 to 300." He adds that he has established the constitutive theory of substances based on the unity of matter. He introduces *porosity* into the consideration of volumes, and asserts that he thus overthrows Dulong and Petit's law, and Avogadro's hypothesis. The author has found the following

law to hold: "The specific heat multiplied by the density equals the porosity, the porosity of hydrogen at the given temperature and pressure being taken as unity."—Observations of the comet 1895, August 20, and of Wolf's planet (1895, October 13) made at Toulouse observatory with the great telescope, and the 0·25 m. equatorial, by M. Rossard.—On the double diurnal oscillation of relative humidity, by M. Alfred Angot. It is shown that the phenomena described by M. Éginitis in a recent number of the *Comptes rendus*, is due to sea-breezes, and has been noticed previously. It does not occur in continental stations, on plains or plateaux.—Observation of an electric phenomenon, by M. Mettetal. A description of an electric fire-ball observed in stormy weather, but in the absence of thunder and lightning, at Grenoble, on October 2. The phenomenon vanished without detonation.—Researches on lithium, magnesium, and cuprous cyanides, by M. Raoul Varet. A thermochemical paper giving the heats of formation of these cyanides. It is pointed out that there is not the same parallelism between the cuprous and cupric cyanides as obtains with the mercurous and mercuric salts.—On beryllium carbide, by M. Louis Henry. The author calls attention to the weakness of M. Lebeau's argument for assigning the atomic weight 14 to beryllium, and recapitulates the considerations which have determined the acceptance of 9 as its atomic weight by most chemists.—On the analysis of emerald, by M. P. Lebeau.—On the estimation of argon, by M. Th. Schlœsing, jun. The author discusses the errors inherent in the method lately described by him, and gives results of the estimation of argon in air taken at different times and from different places. The amount found is constant at 0·934 per cent. Gases from soil show some variations in the amount of contained argon, possibly due to the solubility of this gas.—Synthetical formation of a new ketonic acid, by M. E. Burker.—On the muscles of ants, wasps, and bees, by M. Charles Janet.—On the development of nerve terminations (neuromuscular junctions and motor plates) in striated muscular fibres, by MM. G. Weiss and A. Dutil.—Liquefaction of gelatine, saline digestion of gelatine, by MM. A. Dastre and N. Floresco.—Researches on the biological value of inflammatory leucocytosis, by M. Wladimir Woronine. Localised inflammatory leucocytosis is peculiar to vertebrates, and is an accidental consequence of the particular conditions occurring in their system of blood circulation. Leucocytosis is not a purposed defence against an enemy which has penetrated the organism, as the phagocyte theory maintains. The modifications which are common to all the cases studied are not aggressive, but passive.

DIARY OF SOCIETIES.

LONDON.

THURSDAY, NOVEMBER 7.

LINNEAN SOCIETY, at 8.—On Mimicry in Butterflies of the Genus Hypolimnas, Hübn.: Colonel Swinhoe.—A Revision of the Genus Pentas, Benth.: G. F. Scott Elliot.—An Account of the Butterflies of the Genus Charaxes, Ochs.: Dr. A. G. Butler.

CHEMICAL SOCIETY, at 8.—The Temperatures of Flames and the Acetylene Theory of Luminosity: Prof. Smithells.—The Action of Acidic Oxides on Salts of Hydroxy-acids: Prof. G. G. Henderson and D. Prentice.—Sodium Nitrosulphate and the Constitution of Nitrosulphates: Profs. Divers and Haga.—And other Papers.

FRIDAY, NOVEMBER 8.

ROYAL ASTRONOMICAL SOCIETY, at 8.

PHYSICAL SOCIETY, at 5.—The Magnetic Field of any Cylindrical Coil or Plane Circuit: W. H. Everett.—The Latent Heat of Volatilisation of Benzene: Mr. Griffiths and Miss Marshall.—The Comparison of Latent Heats of Volatilisation: Prof. Ramsay and Miss Marshall.

SUNDAY, NOVEMBER 10.

SUNDAY LECTURE SOCIETY, at 4.—What Man can obtain from the Land: Prince Kropotkin.

MONDAY, NOVEMBER 11.

ROYAL GEOGRAPHICAL SOCIETY, at 8.—Progress of the Jackson-Harmsworth Arctic Expedition: A. Montefiore.

TUESDAY, NOVEMBER 12.

ROYAL PHOTOGRAPHIC SOCIETY, at 8.—Colour-Correct Photography and a New Plate: James Cadett.—Note on the Sensitiveness of Picrated Gelatine to Light: W. K. Burton.

ANTHROPOLOGICAL INSTITUTE, at 8.30.—The Customs and Habits of the Natives inhabiting the Bondee Country: Rev. Godfrey Dale.

ROYAL VICTORIA HALL, at 8.30.—Mountaineering in Central Africa: Dr. J. W. Gregory.

INSTITUTION OF CIVIL ENGINEERS, at 8.—Address by Sir Benjamin Baker, K.C.M.G., President, and Presentation of Medals, &c.

THURSDAY, NOVEMBER 14.

MATHEMATICAL SOCIETY, at 8.—On the Stability and Instability of certain Fluid Motions, iii.; and on the Propagation of Waves upon the Plane Surface separating Two Portions of Fluid of different Vorticities: Lord Rayleigh, Sec.R.S.—Note on Matrices: J. Brill.—Determination of the Volumes of certain Species of Tetrahedra without employment of the Method of Limits: Prof. Hill, F.R.S.—Some Algebraical Theorems connected with the Theory of Partitions: Prof. Forsyth, F.R.S.—Certain General Series: F. H. Jackson.—An Extension of Sylvester's Constructive Theory of Partitions: Major MacMahon, F.R.S.—Note on the Representation of a Conic by a Linear Equation: J. Griffiths.—On the Representation of a Number as a Sum of Squares: Prof. G. B. Mathews.—Theories of Magnetic Action upon Light: A. B. Basset, F.R.S.

FRIDAY, NOVEMBER 15.

EPIDEMIOLOGICAL SOCIETY, at 8.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

BOOKS.—An Exercise Book of Elementary Practical Physics: R. A. Gregory (Macmillan).—Statically Indeterminate Structures and the Principle of Least Work: H. M. Martin (*Engineering* Office).—Mensuration for Senior Students: Prof. A. Lodge (Longmans).—Milk, its Nature and Composition: Dr. C. M. Aikman (Black).—British and European Butterflies and Moths: A. W. Kappel and W. E. Kirby (Nister).—Physiology: Dr. A. MacAlister (S.P.C.K.).—The Structure and Development of the Mosses and Ferns: Prof. D. H. Campbell (Macmillan).—Toxin: "Ouida" (Unwin).—Die Artbildung und Verwandtschaft bei der Schmetterlingen: Dr. G. H. T. Eimer, ii. Theil (Jena, Fischer).—Ethnische Elementargedanken in der Lehre von Menschen: A. Bastian, 2 Vols (Berlin, Weidmann).—North American Shore Birds: D. G. Elliot (Suckling).—Practical Physiology of Plants; F. Darwin and E. H. Acton, 2nd edition (Cambridge University Press).—Hints on the Teaching of Elementary Chemistry in Schools and Science Classes: Prof. Tilden (Longmans).

PAMPHLETS.—Mirifici Logarithmorum Canonis Constructio: J. Nepero, facsimile reprint (Paris, Hermann).—Die Überwindung des Wissenschaftlichen Materialismus: Prof. W. Ostwald (Leipzig, Veit).

SERIALS.—National Review, November (Arnold).—Quarterly Journal of the Geological Society, Vol. li. Part 4, No. 204 (Longmans).—Contemporary Review, November (Isbister).—Quiver, November (Cassell).—Natural Science, November (Rait).—Fortnightly Review, November (Chapman).—Imperial University, College of Agriculture Bulletin, Vol. 2, No. 4 (Tōkyō).

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