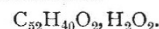


subjected to a thorough test, and is found to yield results greatly inferior in accuracy to those obtained from the old process by means of sodaic lime.—On the early and late varieties of beet-root, by MM. C. Violette and F. Desprez. The early maturing plant, although yielding the largest proportion of sugar, is in other respects subject to many drawbacks preventing its general adoption by growers. A series of experiments here described show that a late variety may be obtained, which, while free from these disadvantages, yields an abundant supply of sugar.—M. Hermite has been unanimously elected Vice-President, and MM. Becquerel and Fremy members of the Central Administrative Committee, for the current year. In the present number is also published the list of the members of the Academy on January 1, 1889. The following are the English and American corresponding members:—*Geometry*: James Joseph Sylvester, George Salmon. *Astronomy*: John Russell Hind, J. C. Adams, Arthur Cayley, Joseph Norman Lockyer, William Huggins, Simon Newcomb, Asaph Hall, Warren De La Rue, Benjamin Althorp Gould, Samuel Langley. *Geography and Navigation*: Admiral G. H. Richards. *General Physics*: James Prescott Joule, George Gabriel Stokes. *Chemistry*: Edward Frankland, Alexander William Williamson. *Mineralogy*: James Hall, Joseph Prestwich. *Botany*: Joseph Dalton Hooker, Maxwell Tylden Masters. *Rural Economy*: Sir John Bennet Lawes, Joseph Henry Gilbert. *Anatomy and Zoology*: James Dwight Dana, Thomas Henry Huxley. *Medicine and Surgery*: Sir James Paget. Foreign Associates: Sir Richard Owen, Sir George Biddell Airy, Sir William Thomson.

January 14.—M. Des Cloizeaux in the chair.—On the solar statistics of the year 1888, by M. R. Wolf. From the various solar and magnetic observations made at the Observatories of Zurich and Milan, M. Wolf has by his well-known method deduced and tabulated for last year the mean monthly values for the relative number  $r$ , for the variations in declination  $z$ , and for the increase  $\Delta r$  and  $\Delta z$  that these quantities have received since the corresponding epochs of the year 1887. It results from these tables that both the relative number and the magnetic variation have continued to diminish, and that it is probable the minimum has now been nearly reached. It also appears that the slight anomalies recorded during the previous year have disappeared, and that the parallelism between these two series has been almost completely re-established.—Mode of diffusion of the voltaic currents in the human organism, by M. L. Danion. From the series of experiments here described it appears that, excepting the skin and bones, the various tissues and substances constituting the organism have practically the same electric conductivity. The skin is in general highly resisting, while the conductivity of the bones, which alone affect the diffusion of the current, is perceptibly less than two-fifths of that of the other hypodermic tissues. Under like conditions the diffused intrapolar and extra-polar intensities have the same value. Contrary to the universal opinion, the choice and combination of electrodes of various dimensions does not perceptibly modify the effects of hypodermic electrization. The experiments made on animals and on man confirm those carried out on homogeneous liquid masses, while at the same time showing the extreme diffusion of the voltaic currents, hence the deductions drawn from the latter order of experiments are applicable to the electrization of the animal organism.—Observations of Faye's comet, made at the Observatory of Algiers with the 0.50 m. telescope, by MM. Trépied, Rambaud, and Sy. These observations cover the period from December 28 to January 5.—On the influence of the shock on the permanent magnetism of nickel, by M. G. Berson. These experiments form a supplement to those lately made by the author with a bar of steel. The various phenomena are in both cases strictly analogous, tending to show that with a field of feeble intensity a bar of either metal may be permanently magnetized, provided the shocks be given while the bar is within the field. The vibrations of the apparatus furnished with permanent magnets should also be carefully avoided, as they tend rapidly to diminish the force of the magnetic momentum.—On the oxidation and scouring of tin, by M. Léo Vignon. In a previous communication (*Comptes rendus*, November 5, 1888) the author showed that crystallized tin, deposited by the action of zinc and of the chemically neutral solutions of the stannous or stannic chlorides, is capable of high oxidation, and also when heated in contact with the air presents the curious property of combining with oxygen without melting, but burning like tinder (*amadou*). His further experiments with this partially oxidized tin have disclosed several facts, which explain the phenomena

already described, and at the same time supply the elements of the theory on which depend the common industrial operations known as tinning and tin-soldering. In general it may be concluded that tin is capable of considerable oxidation in a dry or moist atmosphere, a conclusion which agrees with the comparative data already obtained on the heats of formation of the metallic oxides.—On ergosterine, a new immediate principle of the ergot (*spur*) of rye, by M. C. Tanret. The ergot of rye contains a crystallized substance, which closely resembles, and may readily be confounded with, cholesterine. But the careful study made by M. Tanret of this fungus shows that it differs in its composition both from animal cholesterine and its isomeric vegetable substances. This new principle is accordingly here described and analyzed under the name of ergosterine. Its composition may be represented by the formula—



It crystallizes in alcohol in the form of little pearly pellets, and in ether in that of sharp needles, and is quite insoluble in water. Like cholesterine, it is a monatomic alcohol, as appears from the analysis of its formic, acetic, and butyric ethers.—Papers are contributed by M. Hugo Gylden, on the elementary terms in the co-ordinates of a planet; by M. Maquenne, on the heptine of a perseite; by MM. Ed. Heckel and Fr. Schlagdenhauffen, on the chemical constitution and industrial value of the gutta yielded by *Bassia latifolia*; and by M. Hueppe, on the virulence of cholera parasites.

#### BOOKS, PAMPHLETS, and SERIALS RECEIVED.

Annuaire de l'Académie de Belgique, 1889 (Bruxelles).—Longmans' School Arithmetic with Answers: F. E. Marshall and J. W. Welford (Longmans).—Biologia Centrali-Americana (Botany): W. B. Hemsley and Sir J. D. Hooker.—Hulfstabellen zur Mikroskopischen Mineralbestimmung in Gesteinen: H. Rosenbusch (Stuttgart, Koch).—Les Minéraux des Roches: A. M. Lévy and A. Lacroix (Paris, Baudry).—A Course of Easy Arithmetical Examples for Beginners: J. G. Bradshaw (Macmillan).—Solutions of the Examples in a Treatise on Algebra: C. Smith (Macmillan).—Calendar and General Directory of the Department of Science and Art for the Year 1889 (Eyre and Spottiswoode).—A Monograph of the British Uredineæ and Ustilagineæ: C. B. Plowright (Kegan Paul).—Graphics, or the Art of Calculation by Drawing Lines, Part 1: R. H. Smith (Longmans).

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