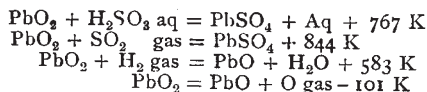


SCIENTIFIC SERIALS.

American Journal of Science, December. — Inversion of temperatures in the 26.68 day solar magnetic period, by Frank H. Bigelow. The northern low-pressure and the southern high-pressure belts of North America vary in latitude directly with the solar magnetic intensity, being further north at the maximum and further south at the minimum of the period; whilst the northern high and southern low-pressure belts vary in the opposite manner. This means that an increase of solar magnetic intensity generates the cyclones further south, and causes the anti-cyclones from the polar circulation to travel to the south.—Remarks on colloidal silver, by C. Barus. Colloidal silver possesses properties which can be explained with reference to the analogous behaviour of suspended sediments, allowance being made for differences in the size of particles. The high degree of insulation detected in Carey Lea's metallic mirrors may be interpreted as an instance of the altered behaviour of non-coherent metallic matter.—Resonance analysis of alternating currents, by M. I. Pupin. Part ii. Closed magnetic circuit transformers distort the primary current considerably more than transformers with open magnetic circuits under equal degrees of magnetisation. A ferric self-inductance in circuit with an alternator which gives a simple harmonic E.M.F. distorts the current by introducing higher odd harmonics, principally the harmonic of three times the frequency of the fundamental. Rotary magnetic fields produced by reasonably well-constructed machines are not accompanied by fluctuations in their intensity.—An improved form of interruptor for large induction coils, by F. L. O. Wadsworth. The interruptor consists of a brass wheel about six inches in diameter, with two insulating and two contact segments placed in its circumference, and mounted directly on the shaft of a small electric motor making about 1200 revolutions per minute. Two copper brushes are made to bear on the hub of the wheel and its circumference respectively. The hub and the conducting sectors are in one piece. The insulators are made of slate.

Wiedemann's Annalen der Physik und Chemie, No. 12.—On the measurement of surface tension of water in capillary tubes of different glasses, by P. Volkmann. A good wetting capacity may be insured by soaking the glass tubes in caustic potash, and then washing with distilled water. That the tubes are perfectly wetted is shown by the perfect mobility of the line of contact. The more nearly circular the section of a tube is, the more does the value of the surface tension of water approach 7.38 mg/mm. at 20.2° C., whatever the kind of glass. Tubes of very small diameter give larger values.—On the thermochemical processes in the secondary cell, by Franz Streintz. The following thermochemical equations were derived from the author's experiments:



The E.M.F. resulting from these equations is 1.885 volts. One of the cells worked with, that having the least concentration, gave 1.90 volts.—On the magnetisation of iron and nickel wires by rapid electric oscillations, by Ignaz Klemencic. The strong damping action of magnetisable metals upon electric oscillation is explained by their circular or transverse magnetisation, which crowds the oscillations into the surface layers much more than in the case of other metals. Hence the resistance of a magnetisable wire to electric oscillations is much greater than that of another of equal conductivity. This resistance was determined by studying the development of heat in the wire by means of a thermo couple. The permeabilities of the metals deduced by the formulæ of Lord Rayleigh and Stefan were: Soft iron, 118; steel pianoforte wire, soft 106, hard 115; Bessemer steel, soft 77, hard 74; nickel, 27. These are very near the values found by Baur and Lord Rayleigh for feeble magnetising fields.—Studies of the electric resonator, by P. Drude. The author shows that a Hertzian resonator must be chiefly affected by the electric forces playing at that part of the resonator circuit which lies opposite the gap, and proves this experimentally. The resistance of a Zehnder vacuum tube used in these experiments was incidentally found to be 2870 million ohms when the interruptor made 25 breaks per second.

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SOCIETIES AND ACADEMIES.

LONDON.

Entomological Society, December 5.—Capt. H. J. Elwes, President, in the chair.—Mr. F. Merrifield exhibited hybrids belonging to the genus *Saturnia*, obtained by Dr. Standfuss, of Zürich; viz. a male and female hybrid from a male of *Saturnia pavonia* and a female of *Saturnia pyri*, to which he had given the name of *Saturnia emilia*; also hybrids from what Dr. Standfuss described as “a male of *Callimorpha dominula*, var. *persona*” (received from Tuscany) and a typical female of *Callimorpha dominula*, to which he had given the name of *romanovi*. Mr. Merrifield remarked that the so-called var. *persona* differed entirely from the type of *Callimorpha dominula*.—Mr. J. W. Tutt exhibited, and read notes on, specimens of a very small form of *Euchloë*, taken in Shropshire by the Rev. F. B. Newnham, who was of opinion that it was distinct from *E. cardamines*. He pointed out that it was much smaller than the latter species, and that the discoidal spot was placed as in *E. turritis* and *E. gruneri* at the juncture of the orange and white spaces, and not, as in *E. cardamines*, well within the orange tip. Mr. Tutt also exhibited, and read notes on, specimens of *Noctua dahlia*, from Cheshire, Essex, Yorkshire, Aberdeenshire, and other counties. The variation in the specimens was said to be partly due to their geographical distribution. Herr Jacoby read a letter received from Mr. Buxton Forman, one of the Assistant Secretaries of the Post Office, to the effect that the Postal Union had decided to make a rule not to allow natural history specimens to be sent by sample post, which was intended for the transmission of *bonâ fide* trade patterns or samples of merchandise, and consequently that the forwarding of such specimens at the sample rate would in future be irregular. Lord Walsingham, F.R.S., stated that he had had a long correspondence with the Post Office authorities on the subject, and that the late Mr. Raikes, when Postmaster-General, promised him in 1891 that such specimens should, so far as the British Post Office was concerned, be transmitted at the sample rates; and a letter to the same effect, from the late Sir Arthur Blackwood, when Secretary of the Post Office, was published in the *Proceedings* of the Society for 1891.—Mr. C. G. Barrett exhibited, for Mr. A. J. Hodges, a specimen of *Hydrilla palustris*, from Wicken Fen, also specimens of *Caradrina ambigua*, from the Isle of Wight. He remarked that one specimen of the latter had the hind margin of the right fore-wing indented, and the wing broadened as though from an injury to the pupa. In this wing the margins of the large orbicular and reniform stigmata had become so joined that the dividing lines had disappeared, and the stigmata were fused into one irregular blotch.—Mr. McLachlan, F.R.S., exhibited, on behalf of Mr. G. F. Wilson, F.R.S., a “grease band” which had been tied round trees to prevent the females of *Cheimatobia brumata* from ascending the trunks for the purposes of oviposition; the band was thickly covered with the bodies of the females, together with a few males.—Surgeon-Captain Manders exhibited a pair of *Chelura bifasciata*, from the Shan States, and called attention to the “assembling” habits of the males, some hundreds of which were attracted by the numerous females which emerged from the cocoons at sunset.—Mr. B. A. Bower exhibited a beautiful variety of *Zygana lonicera*, Esp., having the spots confluent, taken at Chattenden Wood, North Kent, in June last.—Mr. H. Goss exhibited, for Mr. F. W. Ulrich, of Trinidad, a series of males, females, and workers of *Sericomyrmex opacus*, Mayr., a species of fungus-growing and fungus-eating ant.—Colonel Swinhoe read a paper entitled “A List of the *Lepidoptera* of the Khasia Hills, Part III.”—Mr. C. J. Gahan read a paper entitled “On the Longicorn *Coleoptera* of the West India Islands.”—Mr. F. W. Ulrich communicated a paper entitled “Notes on the Fungus Growing and Eating Habit of *Sericomyrmex opacus*, Mayr.”—Prof. E. B. Poulton, F.R.S., read a paper, by Prof. E. B. Titchener, entitled “An apparent case of Sexual Preference in a male Insect.”—The Rev. H. S. Gorham communicated a paper entitled “Notes on Herr A. Kuwert's Revision der Cleriden-gattung *Omadius*, Lap.”

Geological Society, December 5.—Dr. Henry Woodward, F.R.S., President, in the chair.—Supplementary note on the Narborough district (Leicestershire), by Prof. T. G. Bonney, F.R.S.—The tarns of Lakeland, by J. E. Marr, F.R.S. The author had examined several tarns of the English Lake district.