

WE learn from *Science* that a State Veterinary College has been established in New York. It is pointed out that the animal industry of the State is so important and extensive, and the relations of animal diseases so intimately interwoven with human health and well-being, that the financial and sanitary interests of the State will derive benefit from the knowledge and continued investigations of the body of experts which the College will bring together. The following have already been appointed upon the staff of the College:—Director and Professor of Veterinary Medicine, Principles and Practice, Zymotic Diseases, and State Medicine, Dr. James Law; Professor of Veterinary and Comparative Pathology and Bacteriology, Dr. V. A. Moore; Assistant Professor of Veterinary and Comparative Physiology, Materia Medica and Pharmacy, Dr. P. A. Fish; Assistant Professor of Veterinary Anatomy and Anatomical Methods, Dr. G. S. Hopkins; Professor of Microscopical Technology, Histology and Embryology, S. H. Gage; Instructor in Microscopy, Histology and Embryology, Dr. B. F. Kingsbury; Assistant in Veterinary Bacteriology, Dr. R. C. Reed.

SCIENTIFIC SERIALS.

Wiedemann's Annalen der Physik und Chemie, No. 7.—Polarised fluorescence, by L. Sohneke. The polarisation of fluorescent light is capable of giving hints concerning the manner in which the molecules of a solid substance vibrate, and its study may form the basis of the kinetic theory of solids. Theoretically, all doubly-refracting crystals should emit polarised fluorescence. This is found to be the case. Crystals of the regular system are the only crystals which do not. The author has investigated the fluorescence of a large number of substances in confirmation of this view.—Uniformities in the spectra of solid bodies, by F. Paschen. The author investigates the distribution of energy in the spectrum of glowing iron oxide at various temperatures. Of the formula hitherto proposed for its expression, that of Weber most closely approaches the reality. It gives a nearly parabolic curve in which the energy declines on both sides from a maximum which decreases in wave-length as the temperature rises. But the want of symmetry in Weber's curve is greater than in reality. The author finds a new formula, for which he claims that it covers all the observations.—The electrical behaviour of vapours from electrified liquids, by G. Schwalbe. The author finds that the vapours rising from electrified liquids are not capable of bearing away with them any portion of the electric charge, and that Exner's theory of atmospheric electricity must therefore be abandoned.—The damping action of magnetic fields upon rotating insulators, by William Duane. Cylinders and discs of glass, sulphur, paraffin, ebonite, or quartz, oscillating between the poles of a magnet with their axes vertical and at right angles to the lines of force, experience a damping action proportional to the field intensity and to the speed of rotation. This is not due to an action on the suspending threads, nor on the viscosity of the air, nor an electrostatic effect from the current in the coils, nor to induction currents in the substance, as was proved by test experiments and calculations. It must therefore be regarded as a hitherto unobserved magnetic effect upon the insulators in question.—Effect of magnetism upon electromotive force, by A. H. Bucherer. The author finds that in solutions of neutral ferrous salts no E.M.F. exceeding 0.00001 volt can be produced by the magnetisation of one of the two iron electrodes. The E.M.F.s observed by Gross and others must be attributed to changes of concentration produced by the magnetised electrode during its solution.—On the measurement of flame temperatures by thermo-elements, especially the temperature of the Bunsen burner, by W. J. Waggener. The temperatures were determined by various thermo-couples in different parts of the flame. The highest temperature, 1700° C., was indicated in the lower portion of the external mantle. But an infinitely thin thermo-element free from conduction would probably indicate over 1770°. A wire 0.05 mm. thick still suffers from conduction, and it is actually fused in the hottest portion. A more refractory metal is required for these measurements.

Bollettino della Società Sismologica Italiana, vol. ii., 1896, No. 1.—Velocity of propagation of the Paramythia (Epirus) earthquake of the night of May 13-14, 1895, by Dr. G. Agamennone. From time-observations obtained at several places near the epicentre, at six Italian observatories and at

Nicolaiew, it appears that the early tremors travelled with a velocity of 1.94 km. per sec., and the oscillations constituting the maximum phase at the rate of 1.42 km. per sec. There is no evidence of any change in the velocity with the distance from the epicentre.—Vesuvian notes (July-December 1895), by Prof. G. Mercalli.

THE last number of the *Izvestia* of the Russian Geographical Society (1895, vi.) contains a new map of Lake Onega, in which last year's measurements of the depths of the lake are embodied. The greatest depths are in its western part, where they attain from 31 to 68 fathoms. This last depth is reached in the branch by which the lake protrudes towards the north-west. A narrow valley is thus formed at its bottom, and runs north-west to south-east, in the direction of the glacial striation in that region. Another great depth is found at the top of the other fjord-like bay in the northern portion of the lake, also directed to the north-west.

WE find in the last numbers of the *Izvestia* of the East-Siberian branch of the Russian Geographical Society (1895, Nos. 1 to 5) a very good sketch of the Yakutes of Verkhoyansk, by S. Kovalik; and an interesting note on the little-known customary hunting laws of the Buryates, by M. Croll; as also a full translation, from the Mongolian, of the renowned Buddhist "Mirror of Wisdom," which gives the "History of the Kingdom of Sukawadi."—M. Prein's preliminary article on the presence of the lime-tree in the neighbourhood of Krasnoyarsk is especially interesting. It is known that that tree does not appear to the east of the Urals, and only reappears in the Amur region on the very slopes of the high central plateau. But it was lately found in the Kuznetsk Altai mountains, and has now been discovered further to the north-east, in the neighbourhood of Krasnoyarsk.

SOCIETIES AND ACADEMIES
LONDON.

Royal Society, June 18.—"Magnetisation of Liquids." By John S. Townsend.

The experiments on the coefficient of magnetisation of liquids were made with a sensitive induction balance. Both circuits were commuted about sixteen times a second, so that very small inductances could be detected by the galvanometer in the secondary circuit. The principle of the method consisted in balancing the increase of the mutual induction of the primary on the secondary of a solenoid arising from the presence of a liquid in the solenoid against known small inductances. Thus, if the sum of the inductances be reduced to zero, as shown by the galvanometer in the secondary giving no deflection, the balance will be disturbed to the extent $4\pi kM$, due to the insertion of a liquid into the solenoid whose coefficient of magnetisation is k , and the galvanometer in the secondary circuit will give a deflection when the commutator revolves. An adjustable inductance is then reduced by a known amount, m , till the deflection disappears; so that we get

$$4\pi kM = m \quad \therefore k = m/4\pi M,$$

where m and M are quantities easily calculated.

Since the formula does not contain either the rate of the rotation of the commutator or the value of the primary current, no particular precautions are necessary to keep these quantities constant.

In all the determinations the magnetising force was varied from 1 to 9 centigram units, and in no case was there any variation in k . The densities of the salts in solution were also varied over large ranges, and showed that the coefficient of magnetisation for ferric salts in solution depended only on the quantity of iron per c.c. that was present, giving the formula

$$10^7 k = 2660 W - 7.7$$

for ferric salts, where W is the weight of iron per c.c., the quantity -7.7 arising from the diamagnetism of the water of solution.

A similar result was obtained for ferrous salts, the corresponding formula being

$$10^7 k = 2060 W - 7.7,$$

the temperature being 10° C.

Experiments were also performed to find the effect of heating,

and they showed a great diminution in the value of k as the temperature increased, thus letting $k = k_0(1 - \alpha t)$ the coefficient α is the same for ferrous and ferric salts, being a function of the temperature only, its value at the lower temperatures between 5° and 25° C. being about '0055, and at the higher temperatures between 65° and 75° C. its value is '0035.

PARIS.

Academy of Sciences, July 20.—M. A. Chatin in the chair.—Laws of uniform flow to the second approximation in circular tubes and in semicircular canals, by M. J. Boussinesq. A continuation of previous papers on the same subject.—Study of lanthanum carbide, by M. H. Moissan. This carbide, which is obtained from the oxide and carbon in the usual manner, forms a transparent yellowish crystalline mass, of the composition LaC_2 . Water rapidly decomposes it at the ordinary temperature, giving acetylene, ethylene, and methane, with traces of solid and liquid hydrocarbons.—The relations between the expenditure of energy of a muscle and the amount of shortening it undergoes, by M. A. Chauveau. The method of the respiratory exchanges was used in this as in previous work on the same subject. For a given amount of external work done by the muscle, the energy used up is smaller as the muscle is nearer to its maximum length.—Report on a memoir of M. Jäderin, concerning a new method of measuring a base line, by M. Bassot. By the substitution of wires for steel tape, there is a gain in speed and also in the initial expense. The results obtained in working over well-established base lines, although agreeing amongst themselves to 1/100,000, disagree by 1/25,000 from the mean results of other methods.—Mirages and refractions observed on Lake Leman, by M. F. A. Forel.—On the photography of the sounds of the heart, by M. A. de Holowinski. The sounds are transmitted by a sensitive microphone to an optical telephone, the diaphragm of which produces Newton's rings, which are photographed.—On a new method of treating tuberculosis, by M. Fr. Crôte.—The Secretary announced the death of M. A. Kékulé von Stradonitz, Correspondent in the Section of Chemistry, on July 13.—On the summations of Gauss, by M. P. de Séguier.—On the definite quadratic forms of M. Hermite, by M. Alfred Lœwy.—On an electroscope with three gold leaves, by M. L. Benoist. The instrument described has the advantages of increased sensibility and greater certainty in the measurement of the angle of deflection.—On metallic alloys, by M. H. Gautier. Giving fusibility curves for cadmium-silver, zinc-silver, and tin-silver alloys.—On the oxygen salts of mercury, by H. Raoul Varet. A thermochemical study of the condition of some mercuric salts on solution in dilute acids.—On the action of the halogen compounds of phosphorus upon iron, nickel, and cobalt, by M. A. Granger. The phosphides Fe_3P_2 , Ni_3P , and Co_3P , together with the chlorides, were obtained.—On some combinations of iodic acid with other acids, by M. Paul Chretien. An account of the salts of molybdo-iodic, metatungsto-iodic, and phospho-iodic acids.—Action of ammonia upon the paratungstates of potash and soda, by M. L. A. Hallopeau.—Action of reducing agents upon the nitroso-compounds of osmium, by M. L. Brizard. By the reduction of $Os(NO)_2$ in acid solution with stannous chloride an amido-compound, $Os(NH_2)_2Cl_3$, KCl, is obtained.—Fermentation of uric acid by micro-organisms, by M. E. Gérard. Under certain conditions it is possible to split up uric acid in such a manner that the whole of the nitrogen appears as urea, no ammonia being formed.—Action of the chloride of sulphur upon penta-erythrite, by M. J. Bougault. A chlorhydrin and sulphurous ether are formed simultaneously.—On the determination of the freezing-point of dilute aqueous solutions, by M. A. Ponsot. A discussion of the correction recently proposed by M. Raoult.—Estimation of alcohol in the blood after direct injection into the veins, or the introduction of alcoholic vapour into the lungs, by M. N. Gréhan.—Coagulating action of the prostatic fluid upon the contents of the seminal vesicles, by M. M. L. Camus and E. Gley.—The influence of lecithine upon the growth of warm-blooded animals, by M. B. Danilewsky. The injection of lecithine in small quantities causes an acceleration in growth.—On the dorsal apodeme of the Araneida, by M. Causard.—On the tubercle disease of the vine, by M. F. Lataste. The tubercles are shown to be very contagious. It is necessary to destroy by fire all infected stocks to stamp out the disease.—Direct estimation of ethyl alcohol in solutions where it is diluted in proportions between 1/500th and 1/3000th, by M. Maurice Nicloux.

PHILADELPHIA.

Academy of Natural Sciences, June 16.—The following papers were presented for publication:—"On a collection of fishes obtained in Swatow, China, by Miss Adele M. Fielde," by Cloudeley Rutter; "On a collection of fishes made by the Rev. Jos. Seed Roberts in Kingston, Jamaica," by David Starr Jordan and Cloudeley Rutter.—Prof. Edward D. Cope continued his report on the vertebrate remains from the Port Kennedy bone-fissure. Among the Mustelidae were five new species of the genera *Lutra*, *Mephitis*, *Osmotherium*, and *Putorius*. They were represented by at least forty individuals, and were described and named. Remains of the largest known tortoise from this section of the country were described as belonging to a new species of *Clemmys*. *C. insculpta* was also represented, together with a new box-tortoise belonging to the genus *Toxaspis*. A close ally of the black snake was also described.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

BOOKS.—Catalogue of the Fossil Bryozoa in the Department of Geology, British Museum (Natural History). The Jurassic Bryozoa: Dr. J. W. Gregory (London).—Anuario p.p. Observatorio do Rio de Janeiro, 1896 (Rio de Janeiro).—Report on the Work of the Horn Scientific Expedition to Central Australia. Part 3. Geology and Botany (Dulau).—Practical Mechanics applied to the Requirements of the Sailor: T. Mackenzie (Griffin).—Handbuch der Gewebelehre des Menschen: Prof. A. Koelliker, Sechste Umgearbeitete Auflage, Band 1 and 2 (Leipzig, Engelmann).—Everybody's Guide to Chess and Draughts: H. Peachey (Saxon).—Everybody's Cycling Law: S. Wright and C. W. Browne (Saxon).—Erkenntnistheoretische Grundzüge der Naturwissenschaften, &c.: Dr. P. Volkman (Leipzig, Teubner).—Three Essays on Australian Weather: Hon. R. Abercromby (Sydney, White).—Essai de Paléontologie Philosophique: Prof. A. Gaudry (Paris, Masson).—Die Mikrotechnik der Thierischen Morphologie: Dr. S. Apáthy, Erste Abthg. (Braunschweig, Bruhn).

PAMPHLETS.—American Museum of Natural History, Annual Report, 1895 (New York).—History of Modern Mathematics: Prof. D. E. Smith (Chapman).—The X-Rays: A. Thornton (Lund).—Das Parallelogramm der Kräfte: Dr. J. Sperber (Zürich, Spidel).

SERIALS.—Lloyd's Natural History. Butterflies: W. F. Kirby. Part 3 (Lloyd).—Proceedings of the Academy of Natural Sciences of Philadelphia, 1896, Part 1 (Philadelphia).—Royal Natural History, Part 33 (Warne).—History of Mankind: F. Ratzel, translated, Part 10 (Macmillan).—Himmel und Erde, July (Berlin, Paetel).—American Journal of Psychology, Vol. 7, No. 4 (Worcester, Mass.).

CONTENTS.

PAGE

Industrial Photometry. By W. E. S.	289
The Notes of Birds. By W. Warde Fowler	290
The Structure of Man. By A. F. D.	291
Our Book Shelf:—	
Southwell: "The Official Guide to the Norwich Castle Museum"	292
Millar: "Latitude and Longitude: How to Find them."—O. L.	292
Letters to the Editor:—	
The Utility of Specific Characters.—W. T. Thiselton-Dyer, C.M.G., F.R.S.; Prof. W. F. R. Weldon, F.R.S.; J. T. Cunningham	293
The Position of Science at Oxford.—Prof. E. Ray Lankester, F.R.S.; H. B. Baker; "A Parent"	295
Discharge of an Electrified Body by Means of the Tesla Spark.—Rev. Frederick J. Smith, F.R.S.	296
On the Occurrence of the Pelagic Ova of the Anchovy off Lytham.—W. C. M.	296
Information on Scientific Questions.—James Dallas	296
Horary Variation of Meteors.—G. C. Bompas	296
August Kekulé. By R. M.	297
Notes	297
Our Astronomical Column:—	
November Meteors	301
Plumb-line Deviations	301
The Hamburg Observatory	301
The Dunsink Observatory	301
Observatory of Moscow	301
The Solar Eclipse of April 16, 1893	301
The Röntgen Rays. (With Diagrams.) By Prof. J. J. Thomson, F.R.S.	302
London University Commission Bill	306
Science for Secondary Schools	308
University and Educational Intelligence	310
Scientific Serials	311
Societies and Academies	311
Books, Pamphlets, and Serials Received	312