

and Württemberg, but also in Baden, keeping the observations of lightning separate from those of mere rain-storms: this seemed to be necessary, not only inasmuch as von Bezold did not take any account of lightning, but also because the occurrence of lightning at the time of new moon, or during the last quarter of the moon, might give rise to apparent maxima resulting from purely optical causes. He found that the storms possess a periodicity of 29 days, which include three maxima, the chief of these being in the last half-quarter, the next at new moon, and the least at full moon. No physical explanation, or even any idea of any connection between the storms and the phases of the moon, can at present be given.—Dr. Assmann gave an account of a phenomenon which had been observed on the trees in the Thiergarten as a result of the recent heavy snow-fall. The masses of snow which were piled up high on the branches of the trees had slipped down round their sides and hung down like curtains; they possessed a not inconsiderable consistency and glacier-like structure. The superficial thawing which occurred daily about midday had contributed largely to bring about the modification which the snow had undergone.

Physiological Society, March 15.—Prof. du Bois-Reymond, President, in the chair.—Dr. Benda spoke on multinuclear mammalian spermatozoa, and refuted a number of objections which had been raised to his views on spermatogenesis.—Prof. Gad gave an account of experiments which Dr. Piotrowski had made under his direction, on the difference between the conducting power of nerves and their irritability. It was known that under certain conditions, as, for instance, when a nerve is dying or is surrounded by an atmosphere of carbonic acid gas, its power of conducting impulses shows no change, while at the same time the irritability of that part which is surrounded by the gas has disappeared. After confirming the above by renewed experiments, Dr. Piotrowski found that when he surrounded a small stretch of the sciatic nerve with alcohol vapour he obtained a result exactly the reverse to that observed with carbonic acid gas: the nerve was irritable, but could no longer convey impulses coming from its central end. Irritability and conducting power were tested, not only by muscular contractions, but also by the negative variation at the peripheral end of the nerve. Three distinct causes might be assumed for the difference between irritability and conducting power which had been experimentally proved as above. In the first place, irritability and conducting power might be two totally distinct properties of a nerve. But this view must be dismissed, inasmuch as the only possible way of conceiving the propagation of an impulse is to suppose that the impulse is transmitted from one transverse section of the nerve to another, so that the stimulation of one section acts as a stimulus to the rest. In the second place, it might be supposed that the electrical resistance of the nerve-sheath and medullary-sheath had been increased, so that the stimulus, which was applied from the exterior, could not overcome this increased resistance, while at the same time the conducting power of the axis-cylinder remained unchanged. But this view is untenable in face of the fact that alcohol vapour increases the irritability of a nerve but lessens its conducting power. And it is still further opposed by an experiment on the olfactory nerve of the pike. This nerve possesses scarcely any sheath, or at most an extremely thin one, and still it behaved exactly as does a sciatic nerve when surrounded by carbonic acid gas. Finally, mechanical stimuli were just as efficient as electrical, and in this case the resistance of the sheath does not affect the question. A third possible explanation was that nerves possess not only a longitudinal, but also a transverse irritability, and that the latter is diminished by the CO₂, and increased by the alcohol vapour. This last explanation was also rendered probable by an experiment in which the heightened irritability under exposure to alcohol vapour was still further increased when the current used for stimulation was led through the nerve at right angles to its length by means of wide electrodes instead of by means of the wire electrodes usually employed, in which latter case a small longitudinal stretch of the nerve is included between the points of the electrodes. The speaker therefore regards it as proved that the irritability of a nerve can be diminished by the action of CO₂ without its conducting power being simultaneously affected. Further, that by means of alcohol vapour the irritability may be increased, while the conducting power is at the same time considerably diminished, and that nerves possess a distinct transverse irritability. The speaker also regarded it as extremely probable that the effect of CO₂ and alcohol vapour is different upon the transverse and longitudinal conducting powers of a nerve.

VIENNA.

Imperial Academy of Sciences, February 7.—The Secretary read a letter by Dr. Ludolf Griesebach on his travels in Turkistan, describing the geology of the environs of Ghazni.—The following papers were read:—On the retinal image of the insect's eye, by Prof. S. Exner.—On the orbit of Winnecke's comet in the years 1858–86, by E. von Haerdil.—On the relation of atmospheric pressure to electricity (sealed), by T. Altschul.

February 17.—The following papers were read:—On some derivatives of cyanamide, by A. Smolka and A. Friedrich.—On morphine, by Zd. H. Skraup and Dr. Wiegmann.—On the definitive determination of the plane of polarization, by the late L. Kudelka.—On an anomaly of Mendeleeff's periodic system (sealed), by B. Brauner.—On marine Hydrachnida, with some remarks on Midea (Bruz), by R. von Schaub.—On the passage of electricity through bad conductors, by H. Koller.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

Egeson's Weather System of Sunspot Causality: Charles Egeson (Sydney, Turner and Henderson).—The Chemistry of Photography: R. Meldola (Macmillan).—First and Fundamental Truths: J. McCosh (Macmillan).—British Dogs, No. 30: H. Dalziel (C. Gill).—The Dentists' Register, 1889 (Spottiswoode).—The Medical Register, 1889 (Spottiswoode).—A Treatise on Manures: A. B. Griffiths (Whitaker).—Argentine Ornithology, vol. ii.: P. L. Selater and W. H. Hudson (Porter).—Encyclopædia Britannica, ninth edition, index (Edinburgh, Black).—By Leafy Ways: F. A. Knight (Stock).—An Elementary Text-book of Applied Mechanics: D. A. Low (Blackie).—Journal of the Scottish Meteorological Society, third series, No. 5 (Blackwood).—Deutsche Ueberseische Meteorologische Beobachtungen, Gesam-melt und Herausgegeben von der Deutschen Seewarte, Heft 2 (Berlin).—Journal of the Chemical Society, April (Gurney and Jackson).—Geological Magazine, April (Trübner).—Mind, April (Williams and Norgate).—Himmel und Erde, April (Berlin).

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