SCIENTIFIC SERIALS

Poggendorff's Annalen der Physik und Chemie, Nos. 3 and 4, 1875.—These parts contain the following papers :—Remarks on electro-dynamics, by F. Zoellner. These refer to Ampère's law and Helmholtz's potential law.—On the proportion of temporary magnetism to the magnetising force and its relation to the reciprocal action of the metallic particles, by E. Boernstein.—Remarks on the paper of Dr. Streintz, on the torsion oscillations of wires, by O. E. Meyer.—On the conducting resistance at the points where metallic conductors touch, by F. C. G. Müller.— On the specific heats of the elements carbon, boron, and silicon, by Dr. H. F. Weber ; this is the first paper on the subject, and treats on the dependence on temperature of the specific heats of the isolated elements in question.—On the path of the rays of light in a spectroscope, by Dr. J. L. Hoorweg.—On electrodes which cannot be polarised, by A. Oberbeck.—On the conduction of electricity in electrolytes, by W. Beetz.—Supplement to K. L. Bauer's paper (vol. 153, p. 572, of these *Annals*) on the apparent position of a point of light situated in a denser medium, by the author.—General theorems on the images of spheric mirrors and lenses, by the same.—On the theory of the process of assimilation in the vegetable kingdom, by E. von Benkovich.—On a simple method of finding the poles of a rod magnet, by F. C. G. Müller.—On the determination of the velocity of light and the parallax of the sun, by A. Cornu. This paper is taken from the *Comptes Rendus.*—On the unipolar conduction of electricity through layers of gases of different conducting capacity, by C. Braun.—New researches on the currents in electric machines, by F. Rosette. – Some remarks on Helmholtz's theory of vowels, by E. van Qvanten.—On the theory of anomalous dispersion, by H. Helmholtz.— On an electric fall machine, by H. Waldner.—On the experimental determination of diamagnetism by its action of induction, by A. Toepler.—On an optical method of studying the oscillation of solids, by O. N. Rood.—On a new kind of variation sounds, by V. Dvorak.—On the spectrum of the zodiacal light, by Arthur W. Wright (from the *American Journal of Science*).—Some remarks on Thomson's electrometer, by K. A. Holmgren.— Electroscopic note by the editor.

Geographical Magazine, May.—A long and interesting article on the late Admiral Sherard Osborn is the first and chief article in this number, and is followed by one on the Arctic Expedition. Other articles are on "The Salt-farms of the Loire," by Horace St. John ; an interesting account of the town of Kulja, in Russian Turkestan, by A. Vámbéry ; on the Khivan Mission to India in 1871, by Robert Michell ; a short article on Dr. Nachtigall's travels in Africa, with a well-constructed map ; besides reviews, reports of societies, &c.

Zeitschrift der Oesterreichischen Gesellschaft für Meteorologie, April 1.—In continuation of his article in the last number, Dr. Hann proceeds to calculate from the formula (I.) the gradients of two storms, one of which was violent at Vienna on January 27, 1874, and the other a tropical hurricane which passed over the island of St. Thomas on August 21, 1871. In the first case $\triangle B$, expressed in millimetres per 50 miles, amounts to 3·125, of which 2·7 is due to the rotation of the earth, and ·4 to centrifugal force. In the second, the earth's rotation causes a difference of 1·25, and centrifugal force of 8·87, the whole $\triangle B$ being 10·12. A difference of pressure amounting to 9·02 at a distance from the centre of 57 miles, is caused in this case by a velocity of 30 metres per second. Thus, in storms of small diameter, the effect of centrifugal force greatly exceeds, and in our cyclones falls far short of, that of the rotation of the earth. If the air streams towards or (in lofty regions) from the centre, another factor must be introduced into equation (I.) representing resistance to movement. Now, in spiral gyration, the full centrifugal force is not exerted, and we may divide the real velocity into two components, one in the direction of the tangent, and the other at right angles to it. Calling the angle between the direction of movement and the tangent i, the first component will be represented by $v \cos i$, and on this depends the centrifugal force. Finally, we have, according to Ferrel, for a spiral storm the equation—

$$(\text{II.}) \quad \triangle B = \frac{l}{287\cdot4} \cdot \frac{B}{T} \cdot \frac{(2n \sin \phi + u)v}{\cos i}$$

where $u = \dfrac{v \cos i}{r}$ where r = distance from axis of rotation.

Dr. Hann remarks that that portion of the gradient derived from $2n \sin \phi v$ is really independent of the value of i, but according to the formula it increases with the increase of i, and this must be an error. Besides, the second factor, representing centrifugal force, on analysis appears to be independent of i, and so we get too large a quantity for the gradient. With respect to the velocity of the wind, we see that the rate cannot be proportional to $\triangle B$ alone in all parts of the cyclone in the same latitude ; and further, that in different latitudes the value of v for the same gradient is nearly inversely proportional to the sine of the latitude. On the subject of tornadoes, Dr. Hann says that if the earth were not rotating, the tendency of the air to restore equilibrium would prevent any greater disturbances than those which are now observed at the equator. Water before at perfect rest, when an orifice is made in the containing vessel, flows through without producing circulation, but the least original movement causes rapid rotation. In tornados the influence of the rotation of the earth is small in comparison with that of the original condition of the atmosphere. Hence the variable direction of rotation. Large cyclones are not found near the equator. Tornadoes, having no constant force acting to maintain them, must soon be spent. The direction of progression of cyclones can be explained by the inequality of centrifugal force on their north and south sides. On the north side, that part of the gradient depending on $2n \sin \phi$ is greater than on the south side ; the cyclone accordingly moves in the direction of least pressure, viz., towards higher latitudes.

Der Zoologishe Garten.—In the number for March, J. von Fischer remarks on the habits in captivity of the common and Mozambique Ichneumons (*Herpestes ichneumon* and *H. ornatus*); the former is more diurnal and arborial in its manner of life, and is much more playful and tameable than the latter.—A. Petry gives an account of a viper (*Pelias berus*) which gave birth in solitary confinement to one young one, and *fifteen weeks* later to three more.—E. Buck remarks on the life of various species of *Acineta* in the aquarium, and Herr Director Rueff on the history of zoological gardens.—A curious instance of the attachment of the cuckoo (*Cuculus canorus*) to its egg is recorded on the authority of Herr Förster Amort by Victor Ritter von Tschusi-Smidhofen, and Herr von Bothmer gives an interesting account of two tame otters (*Lutra vulgaris*).

Jahrbuch der Kais-Kön. geologischen Reichs-Anstalt. No. 3, band xxiv., 1874. *Hierzu :* Dr. G. Tschermak, *Mineralogische Mittheilungen*, band iv., heft 3.—The first paper in this number of the *Jahrbuch* is one by Ludw. v. Vukotinovic, on the tertiary strata in the neighbourhood of Agram (Croatia). These are divided into two groups, the *lower*, consisting of limestone (nullipore in part), with which is associated sandstone, sometimes fine-grained, sometimes coarse, and pale grey sandy marls ; the *upper* (brackish group) being composed of grey and yellowish brown sandstone, yellow o white sand, and gravel and shingle. In general, a striking resemblance can be traced between these Agram tertiary deposits and the strata of the so-called Vienna basin. This holds good with at least the Upper Tertiary or Miocene ; but as regards the brackish water group, some difference obtains. But this the author believes is only what might have been expected when consideration is had to the varying local conditions under which the deposits must have been accumulated. An account of the brown coal of Croatia and Slavonia is furnished by C. M. Paul. He tells us that brown coal occurs at five different geological horizons in the Tertiary strata of those districts. According to the index, we should have a paper by Dr. O. Lenz, on the ancient glacier of the Rhine, but it does not appear in this number.—Among the *Mineralogische Mittheilungen* we note specially two papers : Petrographical observations on the west coast of Spitzbergen, by Dr. R. v. Drasche ; and on some trachytes of the Tokay-Eperieser Mountains, by Dr. C. Dölter. The rocks this author describes are augite andesite (augite andesite lava), amphibole-andesite, quartziferous augite andesite, rhyolite (quartziferous sanidine trachyte), and sanidine trachyte lava ; analyses of a number of these rocks are given. There is also an interesting preliminary notice of a new circular-polarising substance, by Dr. C. Hintze.

Allgemeine Schweizerische Gesellschaft für die gesammten Naturwissenschaften.—The publication of this society, vol. xxvi (1874), contains only one, but a very elaborate treatise, with two plates, on the ants of Switzerland. It gives their classification, their habits, anatomical and physiological notes regarding them, and remarks on their geographical distribution, together with many new observations regarding their mode of life, &c. The author is Dr. Auguste Torel. The treatise occupies no less than 480 quarto pages, and is written in French.