

suffice to account for the sign and amount of the dissymmetry of Hall's effect. (*b*) On the relation between crystal direction and resistance, increase of magnetic resistance and Hall's effect. Hall's coefficient is not the same for a number of small plates, cut, in different directions, out of the same bismuth crystal. (The ratio of the maximum to the minimum value was once found to be nearly 8.) The amount of the increases of magnetic resistance in the plane  $\perp$  magnetisation is determined by the same angle. (The ratio of maximum to minimum sometimes amounts to more than 2.)

May 29.—Prof. Korteweg, on certain oscillations of higher order and abnormal intensity that can occur in mechanisms of several degrees of freedom. It was shown that, under certain conditions some of the coefficients, and with them, also, the respective oscillations are of abnormal magnitude. The author developed the theory of these abnormal oscillations of higher order. He discussed the part they may perhaps play in the oscillations of a mechanism, in the theory of light, and also in the spectra of gases, if Prof. V. A. Julius's view, that the internal motion of molecules may be conceived as oscillations of moderate intensity about a state of equilibrium, be right.—Mr. Eykman, treating of measures for checking beri-beri, communicated the results of researches made by the Medical Inspector Vorderman, concerning the relation between the nature of the rice-diet and the occurrence of beri-beri in the prisons in Java. From these researches it appears that the disease occurs principally in those prisons where the rice is eaten completely peeled, and, on the contrary, hardly ever in those where the prisoners eat half-peeled rice (*i.e.* rice still covered with the "silvery" pellicle"). This inquiry was suggested by similar results obtained by the author when studying a disease of domestic fowls, resembling beri-beri.—Prof. van der Waals presented, on behalf of Mr. P. Zeeman, further observations by the author concerning the change of spectrum lines by magnetism. Along the lines of force a blue cadmium line was doubled, across the lines of force it was trebled by the action of magnetism, the polarisation of the middle and that of the edges of a broadened line in the latter case being perpendicular to each other. This is in perfect harmony with Lorentz's theory of the effect.—Prof. van der Waals next read a paper by Mr. Zeeman, on a new experiment concerning anomalous wave propagation. Gouy's theory of the subject (*Ann. de Chim. et de Phys.*, vi. 24) was confirmed by means of a combination of a lens and a plate of Iceland spar cut so as to have the optical axis in their planes. Transmitted light was used. The experiment has some advantages over one devised by Joubin for demonstrating Gouy's theory, the principal one being the possibility of having any value for the initial phase difference of the two interfering pencils in the central part of the field.—Prof. van der Waals also presented, on behalf of Prof. Kamerlingh Onnes, (*a*) a paper, by Mr. A. van Eldik, on measurements of the capillary ascent of the liquid phase of a mixture of two substances in equilibrium with the gaseous phase; (*b*) a paper, by Mr. L. H. Siertsema, on the influence of pressure upon the natural rotation of the plane of polarisation in solutions of cane sugar. The measurements mentioned on a previous occasion have been continued with a concentration of 27.84 gr. in 100 cc., and have yielded a variation of 0.270 per cent. for 100 atm. If Tammann's hypothesis concerning the equivalence of internal and external pressure is adopted, these results may be compared with those respecting the variation of the specific rotation capacity by a variation of concentration, or by the addition of an inactive salt. The comparison shows that the phenomenon is probably more complicated than Tammann's hypothesis renders it.—Prof. Lorentz presented, for publication in the *Proceedings*, a paper entitled "On the resistance which a liquid current meets with in a cylindrical tube."—Prof. Bakhuis Roozeboom presented, on behalf of Dr. E. Cohen, a paper on the inversion constant of sugar in an aqueous solution. This constant varies with the concentration of the sugar solution. This difference can be removed if, in calculating the concentration of the inverting acid, the total volume is not used, but if the volume of the sugar in the solution is deducted from it. In this way there arises perfect agreement with the theoretical process of the reaction, as Dr. Cohen demonstrated with experiments made by Ostwald, and observations made by himself, with acids of  $\frac{1}{2} - \frac{1}{128}$  norm.—Prof. J. C. Kapteyn contributed a communication on the distribution of stellar velocities, being a sequel to a former paper on the same subject (May 1895). The author shows how the *magnitude* of the proper motions may be made to contribute to the derivation of the law of velocities, as

well as their *direction*. The author further shows that the most serious anomalies which remain in the distribution of the directions of the proper motions, even as computed with the best data available for the precession and the position of the apex, will disappear for by far the greater part, by assuming a constant error, or an error proportional to the cosine of the declination, in Auwer's proper motions in declinations.

#### BOOKS, PAMPHLET, and SERIALS RECEIVED

BOOKS.—Die Mechanik des Weltalls: Dr. L. Zehnder (Freiburg i.B., Mohr).—Electricity and Magnetism for Beginners: F. W. Sanderson (Macmillan).—Hallucinations and Illusions: E. Parish (Scott).—Wild Flower Lyrics: J. Rigg (A. Gardner).—Electric Smelting and Refining: Dr. W. Borchers, translated, with additions, by W. G. McMillan (Griffin).—Lehrbuch der Erdkunde: Dr. W. Ule, 1 Teil (Leipzig, Freytag).—The Ancient Stone Implements, Weapons and Ornaments of Great Britain: Sir J. Evans, 2nd edition (Longmans).—Reform of Chemical and Physical Calculations: C. J. T. Hanssen (Spon).

PAMPHLET.—On the Synthesis and Molecular Constitution of Dead and Living Proteid: Dr. P. W. Latham (Cambridge, Deighton).

SERIALS.—Traité de Zoologie, Fasc. xi. and xvi. (Paris, Rueff).—Jahrbuch der K. K. Geologischen Reichsanstalt, 1896, 3 u. 4 Hefte, and 1897, 1 Hefte (Wien).—Mind, July (Williams).—American Journal of Science, July (Newhaven).—Journal of Anatomy and Physiology, July (Griffin).—Geological Magazine, July (Dulau).—Lean's Royal Navy List, July (Witherby).—Plantæ Europæ, Tomus ii. fasc. i. (Leipzig, Engelmann).—Brain, Parts 77 and 78 (Macmillan).

#### CONTENTS.

	PAGE
The Ancient Volcanoes of Britain. By Dr. Chas. Barrois	241
American Mathematics. By Prof. A. G. Greenhill, F.R.S.	244
Osteology	245
Our Book Shelf:—	
Kahlbaum: "Studien über Dampfspannkraftmessungen"	246
Wright: "The Induction Coil in Practical Work, including Röntgen Rays"	246
Smith: "The Calculus for Engineers and Physicists."	247
—G.	247
Stoll: "Zur Zoogeographie der landbewohnenden Wirbellosen"	247
"Transactions of the American Microscopical Society"	247
"Experimental-Untersuchungen über Elektrizität von Michael Faraday"	247
Letters to the Editor:—	
The Fullerian Professorship of Physiology at the Royal Institution.—Dr. Augustus D. Waller, F.R.S.	248
Streaming Movements of the Protoplasm in Pollen of Flowers.—H. B. Potter	248
Sensitiveness of the Retina to X-Rays.—Guy Oliver Harrison	248
Distant Stars.—Albert Collison	248
Sound of Distant Firing.—C. Mostyn	248
Blackbird's Nest appropriated by a Wagtail—F. C. Constable	248
The Etiology of Yellow Fever. By Dr. E. Klein, F.R.S.	249
The Variable Star $\eta$ Aquilæ. By Prof. R. Copeland, Astronomer Royal for Scotland	249
British Association Toronto Meeting. III. By Prof. A. B. Macallum	250
The Challenger Album. (With Portrait.)	251
Notes	251
Our Astronomical Column:—	
Jupiter's Satellites	255
The Constant of Aberration	255
Catalogue of 480 Stars for Zone Observations between $-20^{\circ}$ and $-80^{\circ}$	255
Latitude Observations at the U.S. Naval Observatory, Washington	256
Appearance of D'Arrest's Comet	256
Species or Subspecies? By R. Lydekker, F.R.S.	256
Recent Investigations into the Numerical Value of "The Mechanical Equivalent." (With Diagram.) By E. H. Griffiths, F.R.S.	258
The Action of Light on Diastase	259
University and Educational Intelligence	260
Scientific Serials	260
Societies and Academies	260
Books, Pamphlet, and Serials Received	264