scope, seen in clouds small, round bodies moving up and down, which he had taken for rain-drops, and commended to those interested in the study of the atmosphere such observations of clouds. Respecting the possibility of seeing the rain-drops of clouds in this manner there arose a lengthy discussion.

Physical Society, November 4.—Prof. von Helmholtz in the chair.—Prof. Spörer produced and made the subject of discussion a long series of heliographic maps which he had drawn from phenomena he had himself witnessed, and which demonstrated in a very graphic manner the occasionally very important proper motions of different spots. These self movements always occurred on the west side of the spots, and of the groups of spots. They always followed therefore in the sense of the sun's rotation. They were recognised when the spots were observed several times in the course of a day, and they sometimes attained values of from 1000 to 2000 geographical miles in one day. These movements were specially intense in the case of the formation of larger spot-groups; later on they grew slower. For the explanation of these proper motions, the speaker adduced that sunspots invariably formed themselves only over luminous surfaces, that is, at spots of the solar surface possessing a higher temperature. In his measurements of temperature, which had not yet been published, having reference to the year 1880, he made use of a thermo-element on which, through a fine opening in a thick pasteboard disk, he caused to fall the position of the sun's image which he wanted to measure. According to these observations, the emission of heat from a spot-umbra stood to the radiation of heat from a luminous surface as 10 : 18, and the radiation of a spot-umbra to the radiation of the usual solar surface as 10 : 15. Seeing that the temperatures on the sun stood probably in the same relation as did the radiations, so in the luminous surfaces which possessed a higher temperature (in the relation of 6 : 5) must an ascending gas-current develop, to which a descent of colder gas-masses must necessarily correspond. These descending colder gases it was which generated the spots, and gave them—seeing they possessed a greater linear speed of rotation than did the solar surface—a displacement towards the west in the sense of the rotation.—Dr. Pernet spoke on the determination of the air in the vacuum of the barometer, in accordance with the Arago method, connecting his observations with a publication by Dr. Schreiber, who, on comparing the barometer of the Saxon station with the normal barometer, found, after taking due account of all corrections in the latter, volumes of air far surpassing the permissible quantities. Dr. Pernet had now found that two very essential corrections were overlooked: first, the determinations of the air in vacuum under the pressures 0, 40, and 80 millimetres, were carried out in much too rapid succession, so that compensations of temperature were impossible; second, the effect of the capillarity was not observed, an effect which in the case of syphon barometers played so far a great part, as the lower surface of the quicksilver affected by oxidation and dust had a different surface-tension and different angles of rim from the upper surface of the quicksilver, which was comparatively pure. The registrations were therefore not exact if the menisci were not simultaneously measured. This tension of the surface was in the case of thermometers also very important. In consequence of it, the readings of thermometers with narrow tube and less mass of quicksilver were less exact than the readings of thermometers with wider tube and more quicksilver. It was the cause that thermometers with elliptic tubes were less exact than thermometers with circular ones. The effect of the capillarity, again, was, in the opinion of the speaker, the cause of the "dead point" of Mr. Pickering.

VIENNA

Imperial Academy of Sciences, October 7.—On Hall's phenomenon, by A. von Ettingshausen and W. Nernst.—On the data wanted for proving Avogadro's law, by L. Boltzmann.—On the theory of the electro-magnetic phenomenon discovered by Hall, by the same.—On the density of liquefied methene and liquefied oxygen, by K. Olszewski.—On the comets discovered by Mr. Finlay on September 26, and by Dr. Hartwig on October 6, by E. Weiss.—On colchicine, by S. Zeisel.—Contributions to the knowledge of the Tertiary flora of Australia, second paper, by C. von Ettingshausen.

October 14.—Researches on strychnine, especially on the action of zinc-dust on strychnine, by W. F. Loebisch and P. Schoop.—A preliminary communication on the statistics of comets, by T. Unterweger.

October 21.—To histology and physiology of mucous secretion, by W. Biedermann.—Remarks on L. Hermann's galvanotropic experiment, by E. Mach.—On hydrocarotin and carotin, by F. Reinitzer.—On the anatomy and systematics of gall-mites, by A. Nalepa.

BOOKS AND PAMPHLETS RECEIVED

Encyklopædia der Naturwissenschaften, Erste Abtheil., 48-49 Lief.; Zweite Abtheil., 37-38 Lief. (Trewendt, Breslau).—Index Catalogue of the Library of the Surgeon-General's Office, U.S. Army, vol. vii. (Washington).—Proceedings of the Linnean Society of New South Wales, 2nd series, vol. i., part 2 (Cunningham, Sydney).—Quarterly Journal of Microscopical Science, October (Churchill).—Alpine Winter, 3rd edition: Dr. A. T. Wise (Churchill).—Encyclopædia Britannica, vol. xxi. (Black, Edinburgh).—Structure and Life-History of the Cockroach: L. Miall and A. Denny (L. Reeve).—Madagascar, 2 vols.: Capt. S. P. Oliver (Macmillan).—Journal of the Anthropological Institute, November (Trübner).—First Year of Scientific Knowledge, 3rd edition: P. Bert (Relfe).—Nouvel Atlas Céleste: R. A. Proctor; translated into French by P. Gérigny (Gauthier-Villars, Paris).—Ordnance Survey of the United Kingdom: Lieut.-Col. White (Blackwood).—La Photographie sans Objectif: R. Colson (Gauthier-Villars, Paris).—L'Aurora Boréale: M. S. Lemström (Gauthier-Villars, Paris).—Les Hypothèses Cosmogoniques; Examen des Théories Scientifiques Modernes sur l'Origine des Mondes, suivi de la Traduction de la Théorie du Ciel de Kant: C. Wolf (Gauthier-Villars, Paris).—Hand-book of Jamaica for 1886-87: A. C. Sinclair and L. R. Fyfe (Stanford).—Quarterly Journal of the Royal Meteorological Society, October (Stanford).—Monthly Results of Observations made at the Stations of the Royal Meteorological Society, vol. vi., No. 22 (Stanford).

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