aderat de Cassinius. . . . [A description of the ball and the ring as seen by the observer here follows, and succeeding the words] quod a Josepho Campano jam olim observatum, ut figura ab ipso edita comprobat. . . ." When Huygens made this observation, Cassini was with him; but, from the notice in the *Philosophical transactions*, it is probable that Cassini saw the division of the ring in August or September, 1675; so that there is no sufficient ground to think that it was Huygens who showed the division to Cassini. But with regard to the allusion of Huygens to the observation of the two parts of the ring, made by Campani, and the figure of the same which he had published, Dr. Bakhuyzen searched in vain in different books for the figure until he found, between a number of letters addressed to Huygens from Leopold, Prince of Etruria (the same to whom Huygens dedicated his 'Systema Saturnium'), a sheet of paper with two printed drawings of Saturn and Jupiter. The details in the belts of the latter planet show that Campani's telescope was a very good one. The shadow of the ring is to be seen on the disk of Saturn; and the outer part of the ring, for somewhat less than half the total breadth, is dotted, whilst the inner part is bright. There is no line between the two parts, but they are distinctly separated from one another by the difference in brightness. One can also see traces of the inner dark ring. It is highly probable that the above words of Huygens refer to this figure of Saturn; and Dr. Bakhuyzen therefore concludes that Joseph Campani was the first astronomer who, by means of a very good telescope made by himself, saw distinctly the darker and the brighter part of the ring in 1664. It is, however, possible that Cassini was the first who saw the line of separation. The drawings of Saturn and Jupiter made by Campani are printed in 'Stanislai Lubiensecii de Lubienietz Theatrum Cometicum,' Pars prior, page 574. Lubienietz received the drawings from Athanasius Kircher in Rome.

— The proprietors of the *Melbourne age* have sent an exploring expedition to New Guinea.

— In the *Proceedings of the American philosophical society* (xx. no. 113) Professor Pliny Earle Chase has a long paper, thirty-three pages, on 'photodynamics,' in which, starting with 'combined cometary harmonics,' he comes out at 'lines of force and of motion;' and Professor George F. Barker gives an account of his very simple form of constant battery.

— The aeronautical exhibition was held in Paris, at the Palais du Trocadéro, from June 5 to 24, — one week longer than was the intention. There were a number of plans for flying-machines shown, but a strange lack of successful results.

RECENT BOOKS AND PAMPHLETS.

**** *Continuations and brief papers extracted from serial literature without repagination are not included in this list. Exceptions are made for annual reports of American institutions, newly established periodicals, and memoirs of considerable extent.*

Adams, R. C. Evolution; a summary of evidence: a lecture delivered in Montreal, March, 1883. New York, *Putnam*, 1883. 44 p. 12°.

Amsterdam. — Wiskundig genootschap. Catalogus der bibliotheek. Amsterdam, *Sikken*, 1883. 8+112 p. 8°.

Béguyer de Chancourtois. Questions de géologie synthétique; études, documents et modèles exposés à l'exposition de 1883 à Madrid. Paris, *impr. nat.*, 1883. 27 p. 8°.

Bentley, R. The student's guide to structural, morphological, and physiological botany. London, *Churchill*, 1883. 490 p. 12°.

Bernard, G. Champignons observés à La Rochelle et dans les environs. Paris, *Baillière*, 1883. 300 p., 56 pl., atlas. 8°.

Boulnois, H. P. The municipal and sanitary engineer's handbook. London, *Spon*, 1883. 398 p. 8°.

Boussinesq, J. Cours d'analyse infinitésimale de l'Institute industriel du Nord. Lille, *Danel*, 1883. 28+254 p. 4°.

Carr, H. Our domestic poisons; or the poisonous effects of certain dyes and colors (especially those containing arsenic) used in domestic fabrics. London, *Ridgway*, 1883. 47 p. 8°.

Carton. Solutions raisonnées des exercises de géométrie contenus dans les deux cours de M. l'abbé Carton, professeur de mathématiques à l'institution Notre-Dame à Valenciennes. Paris, *Poussielgue*, 1883. 312 p. 12°.

Cassé, E. Aérostation pratique; épure et construction des aérostats et montgolfières, avec quatre planches explicatives. Paris, *Hennuyer*, 1883. 41 p. 8°.

Crié, L. Cours de botanique: organographie et familles naturelles pour la classe de quatrième, les écoles normales et les écoles d'agriculture. Paris, *Doin*, 1883. 12+481 p., 865 fig. 18°.

Daguillon. Entre vignerons à la veillée, causeries sur la culture de la vigne, la vinification et la conservation du vin. Clermont-Ferrand, *impr. Mont-Louis*, 1883. 463 p. 18°.

Davy, G. Tout par l'électricité. Tours, *Mame*, 1883. 475 p. 8°.

Dubois, A. Histoire naturelle vulgarisée, ornithologie populaire; grand et petite rapaces, oiseaux chasseurs. Limoges, *Barbou*, 1883. 124 p. 12°.

—— *The same.* Oiseaux fantastiques et oiseaux chasseurs. Limoges, *Barbou*, 1883. 125 p. 12°.

Duclau, S. La science populaire: les ballons et les premiers voyagers aériens. Limoges, *Ardant*, 1883. 143 p. 12°.

Fontannes, F. Note sur la découverte d'un Unio plissé dans le miocène du Portugal. Paris, *Savy*, 1883. 24 p., pl. 8°.

Graeff, A. Traité d'hydraulique, précédé d'une introduction sur les principes généraux de la mécanique. 3 vol. tom. i.: partie théorique, 8+333 p.; tom. ii.: partie pratique, 541 p.; tom. iii.: tables numériques, notes, errata, planches, 52 p. Paris, *impr. nat.*, 1883. illustr. 4°.

Herrick, C. L. Types of animal life, selected for laboratory use in inland districts. pt. i.: Arthropoda. Minneapolis, *Kimball pr.*, 1883. 33 p., [7] pl. 8°.

Holmes, A. Bromley. Practical electric lighting. New York, *Spon*, 1883. 154 p., illustr. 8°.

Johnston's new map of South Africa, with index. London, *Johnston*, 1883.

Lalande, J. de. Tables de logarithmes pour les nombres et pour les sinus. Revues par le baron Reynaud. Édition stéréotype, augmentée de formules pour la résolution des triangles, par M. Bailleul, typographe, et d'une nouvelle introduction. Paris, *Gauthier-Villars*, 1883. 42+236 p. 16°.

Lambert, J. The germ theory of disease concisely and simply explained. London, *Baillière*, 1883. illustr.

Lyras de Moléon. La mer, description de ses merveilles, ses curiosités les plus remarquables. Limoges, *Ardant*, 1883. 144 p. 12°.

Martin and **Watson.** Handbook to the fernery and aquarium. London, *Unwin*, 1883. illustr.

Mascart, E., and **Joubert**, J. A treatise on electricity and magnetism. Translated by E. Atkinson. vol. i. London, *De la Rue*, 1883. 662 p. 8°.

Oliver, J. A. W. Sunspottery; or, What do we owe to the sun? A popular examination on the cycle theory of the weather, famines, pestilences, commercial panics, etc. London, *Simpkin*, 1883. 54 p. 8°.

Pierret, P. Le livre des morts des anciens Égyptiens. Traduction complète d'après le papyrus de Turin et les manuscrits du Louvre, accompagnée de notes et suivie d'un index alphabétique. Paris, *Leroux*, 1882. 9+665 p. 18°.

Simmonds, P. L. A dictionary of useful animals and their products: a manual of ready reference for all those which are commercially important, and others which man has utilized; including also a glossary of trade and technical terms connected therewith. London, *Spon*, 1883. 136 p. 12°.

Woolcock, J. Studies in anthropology; or, lectures on man. London, *Partridge*, 1883.