BERLIN

Physical Society, November 19, 1886.—Prof. du Bois-Reymond in the chair.—Prof. Liebreich reported on phenomena he had observed in the course of experiments respecting slowly-proceeding chemical reactions. If hydrate of chloral were mixed with an alkaline solution, then was chloroform formed in the shape of a white precipitate. This reaction occurred with all alkaline solutions, only the time varied according to the alkali. While, however, chemical reactions usually ensued in the whole mass of the reacting substances, it was here observed that, when the process of mixture was effected in a test-glass, the uppermost layer remained clear, no turbidity and precipitate formation occurring in it. This layer, which the speaker named the "dead space" ("todter Raum"), was bounded on the upper side by the meniscus of the fluid, and on the lower side by a sharp boundary, having, apparently, a curve opposed to the meniscus. In the capillary space between two glass plates, the dead space displayed itself in very beautiful formation. In horizontal capillary tubes the dead space came into shape at both ends, and in very short capillaries the reaction failed entirely. If from the dead space a little clear fluid were withdrawn and warmed, then did the reaction set in. This showed that in the dead space both fluids were contained, and that it was only their chemical action that was prevented. The dead space showed itself in drops at the edge of the curve. In the capillary space between two menisci was found an external ring, and the middle clear, while reaction occurred only in a small ring. If tubes were closed by a membrane above and below, and filled with the mixture of hydrate of chloral and alkali, then did the dead space appear both at the top and the bottom. The same phenomenon presented itself likewise in animal membranes—for example, in a rabbit's bladder or in an intestine. On the other hand, the dead space was observed neither in a guttapercha alembic nor in a similar shaped glass retort. The speaker also discussed many other sorts of phenomena in respect of the dead space, both with the fluids already named and with other fluids, demonstrating a large part of them by experiments. In conclusion, he set up the hypothesis that, in the experiments referred to, the chemical reaction was hindered by phenomena of surface-tension, a matter which should be further investigated by additional experiments. A lengthy discussion followed this paper.—Dr. Weinstein then reported on a publication of the Normal Standard of Weights and Measures Commission, "Construction and Repeated Trial of the Principal Standards and the Control Standards" ("Die Herstellung und Wiederkehrende Prüfung der Hauptnormalen und der Controllnormalen"). He brought out that in this publication the idea of weight was officially defined by a mass, the unit of which, the kilogramme, was equal to a cubic decimetre of distilled water at 4° C. The trial of the normal metre of platinum resulted in the establishment of its invariability. The kilogramme of platinum was likewise unchanged, while , on the other hand, the control standard-kilogramme showed a slight increase of weight through oxidation. The examination of the dry measures resulted in showing a considerable diminution of volume, a fact which would have to be ascribed to elastic and thermal after-effects in the material that had been employed for the standard dry measures.

Physiological Society, November 26, 1886.—Prof. du Bois-Reymond in the chair.—After the re-election of the President and Council, in accordance with the statutes of the Society, and the disposal of several business motions, Prof. Falk communicated a case taken from his forensic practice, which was not without physiological interest. A boy was run over by a heavy van and in a few minutes died. A *post-mortem* showed a gaping rupture of the thyroid and of the cricoid cartilage, the entrance of blood into the air-passages—causing death by suffocation—and into the digestive organs. It was, now, a remarkable and physiologically interesting fact that the blood had penetrated not only into the stomach, but into the small intestine, and that, as far as the neighbourhood of the cœcum. Seeing that the abdominal organs were perfectly intact, and the intestines even to a high degree anæmic, the blood must have proceeded from the stomach, and that during the brief time of the agony; for peristaltic movements appeared indeed after death, but in no case in the stomach, and the passage of the contents of the stomach into the intestine was never observed after death had set in. The speaker had, on the other hand, observed very violent swallowing movements as well as increased peristaltic movement in the intestine and stomach in men, and especially in his experiments with animals during the agony of suffocation. In the discussion following, Prof. Zuntz corroborated the fact of the appearance of increased peristaltic movements, and of the abnormally far advance into the intestine of the contents of the stomach during death by suffocation, citing, as he did, some earlier experiments he had not yet published. By way of testing the assertion proceeding from the laboratory of Prof. Ludwig, that acid chyme was normally found in the small intestine of animals, he had instituted experiments in which very soon after death he opened the abdomen of animals, and by a ligature isolated the small intestine from the stomach; he then in every case found the contents of the intestine neutral or alkaline. If on the other hand he poisoned the animals, as in the case of Ludwig's experiments, with curare, then were the contents of the intestine acid. The cause of that, however, was that the animals had died from suffocation, and that the asphyctic blood had induced a lively peristaltic movement of the smooth intestinal muscles not paralysed by curare, and so, therefore, an abnormally rapid propulsion of the contents of the stomach into the small intestine.

BOOKS AND PAMPHLETS RECEIVED

Mind, January (Williams and Norgate).—The Cruise of the *Marchesa* to Kamchatka and New Guinea, 2 vols: F. H. H. Guillemard (J. Murray).—Proceedings and Transactions of the Royal Society of Canada for the Year 1885, vol. iii. (Montreal).—Journal of Anatomy and Physiology, January (Williams and Norgate).—Elements of Harmony and Counterpoint: F. Davenport (Longmans).—Bees and Bee-keeping, vol. i., parts 11, 12, 13; vol. ii., parts 1, 2, 3, 4: F. R. Cheshire (Gill).—Journal of the Chemical Society for January, and Supplementary Number (Van Voorst).—Journal of the Scottish Meteorological Society, third series, No. 3 (Blackwood).—Le Mesure du Mètre: W. de Fonvielle (Hachette, Paris).—Annalen der Physik und Chemie, 1886, No. 12 (Leipzig).—Beiblätter zu den Annalen der Physik und Chemie, 1886, No. 11 (Leipzig).—Text-book of British Fungi: W. D. Hay (Sonnenschein).—Hand-book of Practical Botany: Strasburger and Hillhouse (Sonnenschein).—Historical Basis of Modern Europe: A. Weir (Sonnenschein).—The Primula: Report on the Primula Conference (Macmillan).—Resa till Grönland: Nils O. Holst.—Proprietà Industriale (Roma).—Beiträge zur Statistik der Blitzschläge in Deutschland: Dr. G. Hellmann (Berlin).—History and Biology of Pear-Blight: J. C. Arthur.—An Address before the American Association for the Advancement of Science: T. C. Chamberlin (Salem).—Jahresbericht Am., 25 Mai, 1886, dem Comite der Nicolai-Hauptsernwarte (St. Petersburg).—Grundzüge einer Theorie der Kosmischen Atmosphären: W. Schlemüller (Prag).—Ueber die Allegemeine Beugungsfigur in Fernröhren: H. Struve (St. Petersburg).

CONTENTS