

gaseous mass has condensed to a moderate size as compared with the dimensions it must have possessed before any planets had been formed.

SYDNEY.

Royal Society of New South Wales, July 3.—Prof. Liversidge, F.R.S., President in the chair.—The Chairman announced that Mr. C. S. Wilkinson, the Government Geologist, had kindly consented to deliver (gratuitously) a course of (three) lectures in connection with the Clarke Memorial, commencing in October or November next.—The following papers were read:—Notes on the high tide of June 15–17, 1889, by John Tebbutt; and on the marine and fresh-water Invertebrates of Port Jackson and the neighbourhood, by Thomas Whitelegge. At the conclusion of the latter paper the President presented the Society's bronze medal, which, together with a money prize of £25, had been awarded to Mr. Whitelegge for his paper.—Prof. Anderson Stuart showed a modification of the "kymoscope" which he exhibited at the Society's last monthly meeting. This form demonstrated the phenomena of interference in wave motion—one series of tubes had one wave, a parallel series had the other, and both opened into a common series in which the interference was made visible. The two waves came from pumps which could be so arranged as to vary the amplitude of the waves and to change the position of the straight lines produced when the waves met or "interfered."

PARIS.

Academy of Sciences, August 19.—M. des Cloizeaux, President, in the chair.—Remarks on the conditions under which the fixation of nitrogen is effected in argillaceous soils, by M. Berthelot. Here is described a fresh series of experiments on the fixation of nitrogen in the ground with the co-operation of living organisms, microbes, and more highly organized plants. Replying to a recent communication of M. Schloesing on the negative results of his studies, M. Berthelot accepts these conclusions, and even claims priority for them, adding, however, that they were given by him as defining the negative conditions of the phenomenon—that is, the conditions under which the fixation of nitrogen does not take place. In a second paper M. Berthelot describes some further researches on the fixation of nitrogen by vegetable humus under the influence of electricity.—Note on the glacial epoch, by M. H. Faye. It is argued that glaciation does not depend on any direct cause, such as a passing obscuration of the sun at the beginning of the Quaternary epoch, but is due to a far more remote cause—that is to say, the appearance of the seasons and of the poles of low temperature at a time when the sun had acquired its definite form and dimensions. A repetition of the great changes that took place during Tertiary times has been prevented by the continually increasing thickness of the terrestrial crust and by the slower rate of progress of the cooling process.—Observations on the sardine frequenting the Mediterranean waters, by M. A. F. Marion. The results are here communicated of the researches made by the author during the fishing season 1888–1889, for the purpose of verifying and completing his previous observations on the migrations and life-history of the sardine periodically visiting the shores of the Mediterranean.—On the total eclipse of August 19, 1887, by M. N. Egoroff. This is a summary of the Russian report on the observations of the eclipse of 1887 made at the seven stations of the Russian Physico-Chemical Society in accordance with the programme prepared by the Special Commission.—Electric figures produced by lightning, by M. Ch. V. Zenger. The curious effects are described of an electric discharge which struck a silvered mirror during a terrific thunderstorm near Prague, on June 9, 1889. The mirror shows over ten points at which the electric fluid penetrated through its gilded frame, volatilizing and transferring the gold to the anterior face of the glass, while on the opposite side the volatilization of the silver coating produced the most beautiful electric figures. These figures show that there occurred repeated and successive discharges, as also indicated by recent photographs of flashes taken with the oscillating camera obscura.—Observation of the occultation of Jupiter and its satellites by the moon, taken at the Observatory of Nice, by M. Perrotin. The hours of the various phases of the occultation that took place on August 7, 1889, are tabulated at mean time at Nice. The satellites are shown to have disappeared, not instantaneously, but gradually during several tenths of a second.—Observations of the new planet discovered at the Observatory of Nice on August 3, 1889, by M. Charlois. The observations are for the period August 3–6, when the planet had the brightness of a star of magnitude 13.5 to 14.—On a new mode of teaching music,

based on the periodicity of the octave, by M. Ricard. The author aims at a radical reform in the teaching of music, and expounds his system in a series of fundamental propositions, such as: musical effect is quite different from acoustic effect; there can be no physical gamut, a major and a minor, but one only, that of the white notes of the piano, called the major, and so on.—On contraction in solutions, by M. Charpy. The object of these researches is to determine how the contraction produced in the process of solution varies with its concentration.—On the phosphotungstic acids, by M. E. Péchard. The methods hitherto employed for the preparation of these acids have all been indirect. But the study of metatungstic acid has suggested to M. Péchard the possibility of realizing the direct union of this acid with phosphoric acid. The general method of preparation consists in evaporating, under suitable conditions, a mixture of both acids in determined proportions.—On the passivity of cobalt, by M. Ernest Saint-Edme. It is shown that certain treatises on chemistry are wrong in stating that cobalt in the presence of concentrated nitric acid becomes *passive* like iron and nickel.—On the heat of combustion of some organic compounds (continued), by M. S. Ossipoff. The author's series of determinations is here concluded with teraconic acid, malic anhydride, methyl fumarate, and maleate of methyl.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

Leçons Synthétiques de Mécanique Générale: M. J. Boussinesq (Paris, Gauthier-Villars).—Traité d'Optique, tome premier, M. E. Mascart (Paris, Gauthier-Villars).—Index Generum Avium; a List of the Genera and Subgenera of Birds: F. H. Waterhouse (Porter).—The Alternate Current Transformer in Theory and Practice; vol. i. The Induction of Electric Currents: J. A. Fleming (Electrician Office).—Album von Celbes-Typen: Dr. A. B. Meyer (Dresden).—Lung-Ch'Uan-Yao oder Altes Seladon-Porzellan: Dr. A. B. Meyer (Berlin, Friedländer).—Le Développement de l'Image Latente: A. de la Baume Pluvinel (Paris, Gauthier-Villars).—Traité Pratique du Développement: A. Londe (Paris, Gauthier-Villars).—Le Cylindrographe: P. M. Gessard (Paris, Gauthier-Villars).—History of Higher Education in South Carolina: C. Meriwether (Washington).—Education in Georgia: C. E. Jones (Washington).—History of Education in Florida: G. G. Bush (Washington).—Higher Education in Wisconsin: Allen and Spencer (Washington).

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