

and animals, showing the details of their structure; and skeletons and plaster casts by which the fundamental facts of anatomy and human physiology can be successfully taught. Thus, with the aid of these admirable elementary museums and appliances, which Mr. Forster might well envy, the broad principles of physical, chemical, and biological science are taught to all whose education goes no further than the public schools; and as regards the others, such instruction in the elements of science forms an admirable introduction to the University course."

SOCIETIES AND ACADEMIES

LONDON

Royal Microscopical Society, October 3.—Mr. H. C. Sorby, president, in the chair.—The president read a paper on an improved method for distinguishing the axes of double refracting substances which consisted of a wedge-shaped piece of quartz cut parallel to the positive axis of the crystal, and made to slide into the eye-piece of the microscope. When this passed across the field of view in polarised light every gradation of tint was successively produced by the varying thickness of the quartz, and by viewing crystals through this it was very easy at once to determine the position of their axes by noting the effect upon the series of coloured bands produced by the quartz scale.—A paper by Mr. F. H. Wenham on the aperture of object glasses was read by the secretary. The purport of Mr. Wenham's paper was further explained, and illustrations of the method proposed were drawn on the black-board by Mr. J. E. Ingpen.—Mr. Slack described some curious observations made as to the habit and power of offensive attack by the genus *diglena* upon *anguillula* and other species.

PHILADELPHIA

Academy of Natural Sciences, May 1.—On the Cambari (crayfishes) of Northern Indiana, by W. F. Bundy (*Proc.*, 1877, p. 171).—Synopsis of the fishes of Lake Nicaragua, by Drs. Gill and Bransford (pp. 175-191).—On lavendulite from Chili, by E. Goldsmith.

May 15.—Prof. Leidy, on gregarines.

May 22.—Prof. Leidy, on flukes infesting molluscs.—H. C. Yarrow, notes on the natural history of Fort Macon, N.C. (pp. 203-218).—On the brain of *Chimara monstrosa*, by Dr. Wilder (pp. 219-250).

June 12.—Prof. Leidy, remarks on parasitic infusoria.

June 26.—Prof. Leidy, the birth of a rhizopod (*Euglypha*).

PARIS

Academy of Sciences, October 8.—M. Peligot in the chair.—On an incident mentioned at the congress of Stuttgart, by M. Faye. This relates to recent geodetic operations in the north-east of Spain, directed by Gen. Ibanez.—Apparatus for measuring the heat of vaporisation of liquids, by M. Berthelot. He aims at greater simplicity, while transmitting the vapour dry from generator to calorimeter. A phial with hermetically sealed neck is traversed by a wide vertical tube open at its inclosed top, passing down through the phial to a serpentine in a calorimeter, and (in its way) through a metallic disc, a circular lamp, another metallic plate, a sheet of paste-board, and a wooden plate (the last three forming the cover of the calorimeter). He finds on an average 636.2 as the total heat furnished by water between 100° and zero (Regnault 636.6).—On the determination of the heat of fusion, by M. Berthelot. The two phenomena of fusion and solidification in a body like hydrate of chloral are not reciprocal when one directly follows the other, and the heat absorbed in one case is not equal to that liberated in the other. To measure the calorific work in fusion the body should be brought to a certain final state, proved identical by thermal measurements, e.g., dissolving hydrate of chloral at a given temperature and in a constant quantity of water, and comparing specimens recently fused, and others kept several months or years. Then a known weight of the substance is raised to different temperatures, sometimes above sometimes below the point of fusion, then immersed and dissolved suddenly in the water of the calorimeter. He finds the heat of fusion to be 33.2 cal. for 1 gramme.—On the variations of the heat liberated by union of water and sulphuric acid at different temperatures, by M. Berthelot.—On the relation which should exist between the diameter of magnetic cores of electro-magnets and their length, by M. Du Moncel. For equal resistances of circuit the diameters should be proportional to the electro-

motive force for equal electromotive forces, in inverse ratio of the resistance of the circuit, including the battery resistance; for equal diameters proportional to the square roots of the resistances of the circuits; for given electromotive force and with electro-magnets in their conditions of maximum the electro-motive forces of the batteries should be proportional to the square roots of the resistances of the circuits.—Programme of the expedition of next year (July, 1878) to the glacial sea of Siberia, by M. Nordenskjöld.—Observations of the planet 175 Palisa, and of the new comet of Tempel, with the garden equatorial, by MM. Paul and Prosper Henry.—On a general method of transformation of integrals depending on square roots; application to a fundamental problem of geodesy, by M. Callandreaux.—On the spectrum of the new metal davyum, by M. Kern. He indicates the principal lines.—Pyrogenous decomposition of chlorhydrate, bromhydrate, and iodhydrate of trimethylamine; new characteristic of methylamines, by M. Vincent. The new characteristic is the production of chloride, bromide, and iodide of methyl from such decomposition.—On iodide of starch, by M. Bondonneau.—Synthesis of benzoic acid and of benzophenone, by MM. Friedel, Crafts, and Ador.—Experiments on the tape-like development of human cysticercus, by M. Redou. Man may, like swine, become completely infested by cysticerci. M. Redou caused some cysts from a human body to be ingested with tepid milk into young pigs and dogs; he also swallowed some himself. It appeared that only man presents a favourable medium; the pigs and dogs gave no trace of the tape-worms; but the author after about three months discovered worms in his stools. This throws light on the nature of the development of the human cysticercus, and presents a striking exception to the law of parasitism with alternating generations.—Description of the meteoric stones of Rochester, Warrenton, and Cynthia which fell respectively on December 21, 1876, and January 3 and 23, 1877, with some remarks on previous falls of meteorites in the same region, by Mr. Smith.—M. Bouvel called attention to an arrangement for compressing oxygen and hydrogen to considerable pressures. The wires from a battery are conducted into a thick metallic block containing a strong glass voltameter with one chamber double the other; under the chambers are the terminal electrode immersed in acidulated water, the bottom of the reservoirs being closed by a strong screw. The reservoir communicates also with another cylinder in which a screw can be made to press on the liquid. Two narrow passages rise from the gas chamber and are closed by screws.

CONTENTS

PAGE

HUXLEY'S "ANATOMY OF INVERTEBRATED ANIMALS"	517
EVERETT'S "TEXT-BOOK OF PHYSICS"	518
OUR BOOK SHELF:—	
Britten's "Popular British Fungi; containing Descriptions and Histories of the Principal Fungi, both Edible and Poisonous, of our Country"	519
Post's "Zeitschrift für das chemische Grossgewerbe"	519
LETTERS TO THE EDITOR:—	
Indian Rainfall Statistics.—OLD MADRASSEE	519
Potential Energy.—X.; W. G.; W. P. O.	520
Dealers in Zoological Specimens and Models.—Prof. E. RAY LANKESTER, F.R.S.	521
Ornithology of Costa Rica.—A. BOUCARD	521
On the Supposed Influence of Light on Combustion.—C. TOMLINSON, F.R.S.	521
Selective Discrimination of Insects.—S. B.	522
OUR ASTRONOMICAL COLUMN:—	
The Nebula, Messier 8 (G.C. 4361)	522
The Binary Star α Centauri	522
Jupiter's Satellites	522
The Present Comets	522
BIOLOGICAL NOTES	523
FOX TALBOT	523
THE PHOTOGRAPHIC EXHIBITION	525
THE NORWEGIAN DEEP-SEA EXPEDITION. By Dr. H. MOHN (<i>With Illustrations and Map</i>).	526
NOTES	529
THE LIMITS OF NATURAL KNOWLEDGE. By Prof. C. VON NÄGELI	531
UNIVERSITY AND EDUCATIONAL INTELLIGENCE	535
SOCIETIES AND ACADEMIES	536

ERRATUM.—In NATURE, vol. xvi. p. 339, the reference to the *Astron. Nach.* should be to Nos. 1,663 and 1,733.