

now rise and fall each in its own place; they pose, therefore, in the film and impress their form upon it, the largest movement giving the largest impression, and where the movement is naught the impression is naught."

Part II., by Mr. Tallent, is devoted to three-color photography. It opens with an elementary treatment of spectrum work as applied to the study of color and color mixtures. Following this comes a very complete account of color curves, and the reproduction of various colors by the synthesis of three primary spectrum colors. Ives's beautiful method is again described, together with fuller details regarding the preparation of color records, the preparation and use of color filters and other details. The various other modifications of the three-color scheme are treated, closing with a chapter on Wood's diffraction process. It seems a pity that fuller working details of some of the methods of producing colored transparencies by the superposition of dyed films, are not given. However, there are hints enough to enable one to experiment along these lines if so inclined.

Part III., by Mr. Senior, is a dozen or so pages on the Lippmann process, with formulæ for the preparation of the emulsion. There is a good deal of repetition in the book, as is usually the case in symposia of this sort. It will, however, be found very useful as a reference book by those desirous of experimenting with any of the processes.

R. W. W.

BOOKS RECEIVED.

- Lectures on the Lunar Theory.* JOHN COUCH ADAMS. Edited by R. A. SAMPSON. New York, The Macmillan Company; London, Cambridge, University Press. 1900. Pp. 88. \$1.25.
- Knowledge, Belief and Certitude.* FREDERICK STORRS TURNER. New York, The Macmillan Company; London, Swan, Sonnenschein & Company. 1900. Pp. viii+484. \$2.25.
- Engineering Chemistry.* THOMAS B. STILLMAN. Easton, Pa., The Chemical Publishing Company. 1900. Vol. II., pp. xxii+503. \$4.50.
- Elementary Organic Analysis.* FRANCIS GANO BENE-DICT. Easton, Pa., The Chemical Publishing Company. 1900. Pp. vi+86. \$1.00.
- A Text-book of Urine Analysis.* JOHN H. LONG. Easton, Pa., The Chemical Publishing Company. 1900. Pp. iv+249. \$1.50.
- Evolution of the Thermometer.* HENRY CARRINGTON BOLTON. Easton, Pa., The Chemical Publishing Company. 1900. Pp. 98. \$1.00.
- The Chemists' Pocket Manual.* RICHARD K. MEADE. Easton, Pa., The Chemical Publishing Company. 1900. Pp. vii+204. \$2.00.
- Handbook of Practical Hygiene.* D. H. BERGEY. Easton, Pa., The Chemical Publishing Company. 1899. Pp. 164. \$1.50.
- Concretions from the Champlain Clays of the Connecticut Valley.* J. M. ARMS SHELDON. Boston. 1900. Pp. 45. Plate xiv.
- Annual Report of the State Geologist of New Jersey for the Year 1899: Forests.* Trenton, N. J., MacCrel-lish & Quigley. 1900. Pp. xvi+327.
- Nature's Miracles: Electricity and Magnetism.* ELI-SHA GRAY. New York, Fords, Howard & Hulbert. 1900. Pp. vi+248. \$60.

SCIENTIFIC JOURNALS AND ARTICLES.

THE January *American Journal of Physiology*, the concluding number of Vol. IV., records in the initial paper further interesting results obtained by Loeb in his study of artificial parthenogenesis. Loeb has caused the eggs of *Chaetopterus*, an annelid, to develop into free swimming larvæ by simply placing the eggs in various solutions which cause them to lose water. Potassium ions, however, have peculiar power over these eggs which grow to the trochophore stage in a KCl solution with an osmotic pressure considerably lower than that of sea water. A slight addition of HCl to the sea water also causes the eggs to develop. Loeb carefully observed the morphological changes in the eggs during their development, and found that although the artificially produced trochophores may be indistinguishable from those arising from fertilized eggs, yet the processes of segmentation varied so greatly that these processes must be regarded as distinctly a function of the constitution of the sea water. These observations, together with those on the formation of giant embryos by the fusion of two or more eggs, have an important bearing on developmental mechanics and cell lineage. Loeb concludes with a consideration of the relation