

Although the essential similarity of light and radiant heat is insisted upon, and the distinction between heat and radiant heat clearly drawn, no experiments to illustrate the application of the laws of reflection to the latter are given. The experiment with two concave mirrors in which heat is transferred by radiation from one focus to the other is surely one of the best for impressing on students the connection between the various radiations.

(3) This much longer volume is not nearly so good as those just commented upon. It is written specifically for the London matriculation examination, and it may be said at once that it is much too difficult. It would have been better if less material had been treated more fully. As it is, the book is overcrowded with statements which it would be impossible for the elementary student to deduce for himself—he must merely commit them to memory. He is told, for instance, that the “dyne” is the weight of one gram divided by 981, a statement which is not only incorrect, but conveys no impression of the importance of the absolute unit of force. A long discussion is entered upon as to the relative merits of the two-fluid and one-fluid theories of electricity. The matriculation student is advised in the text to accept the one-fluid theory, and then a footnote tells him that probably he will have to revert to the two-fluid theory because recent experiments point to the existence of positive electricity. Controversies of this kind are altogether out of place in elementary text-books; they only confuse the student.

There is a profusion of examples at the end of each chapter. These are, as a whole, good; but it is doubtful whether the pupil would be in a position to answer them intelligently if left to himself.

#### OUR BOOK SHELF.

*Studien über die Bestimmung des weiblichen Geschlechtes.* By Prof. Achille Russo. Pp. v+105. (Jena: Gustav Fischer, 1909.) Price 3 marks.

PROF. RUSSO has published a general account of very interesting experiments which he has made on the determination of the female sex in rabbits. His method was to dose the animals with lecithin—a well-known constituent of yolk of egg—administering it in various ways. He injected it into the peritoneal cavity or subcutaneously; he even introduced it through the mouth. From control experiments it seemed clear that one of the results of introducing the lecithin in considerable quantity into the system, where it normally occurs in many different tissues, was the accumulation of deutoplasmic material in the ovarian follicles and in the oocytes; and Russo found that rabbits treated in this way, and subsequently mated, had more female than male offspring. Sometimes all the offspring were female. The security of the conclusion that the lecithin treatment was the condition of this disproportionate number of female offspring depends on the number of cases investigated and on the avoidance of selected stocks. Russo is well aware of this, and he does not betray any dogmatism.

In the normal ovary, or in what he believes to be the normal ovary, Prof. Russo distinguishes two kinds of ova, one kind rich in nutritive material deposited in the zona pellucida and in the vitellus, the other kind with little or none. The lecithin

treatment increases the number of the richly equipped, highly anabolic ova, and they are (if the correlation has been adequately substantiated) the female-producing ova.

In young rabbits of five or six months the ova show little vitelline material, no chromidial corpuscles, and a clear zona pellucida. This is a sign of deficient nutrition, and there is some evidence that these very young ova tend to be male-producing. As the nutrition of the ovary improves with age, the ova become better equipped with “embryoplasmic” material, and tend to be female-producing. The general result of Prof. Russo’s interesting experiments is to show that the ovary is a very plastic organ, responding to the lecithin treatment by an increase in the number of female-producing ova. He suggests that the lecithin treatment of males may affect the spermatozoa in an analogous way—in their mitochondrial apparatus. In developing his thesis, the author communicates many valuable observations on the germinal epithelium, the granulosa, the zona pellucida, and the various chromatic substances which appear in the ooplasm. Statistics of the experiments and details as to methods employed are duly submitted, and the whole discussion is conducted in an admirable scientific temper.

*Report on the Mines and Mineral Resources of Natal (other than Coal).* By Dr. F. H. Hatch. Pp. xii+155+vii plates. Published by order of the Natal Government. (London: Printed by R. Clay and Sons, Ltd., 1910.)

THIS little volume, which contains the results of an eight months’ prospecting trip in the colony of Natal, undertaken by Dr. Hatch on behalf of the Natal Government, is extremely disappointing, as the only conclusion that can be drawn from it is that Natal possesses no mineral, other than coal, that is deserving of any serious attention. Dr. Hatch sums up his impression in the words, “no large well-developed metal mines, either of the precious or of base metals, exist in Natal.” To which may be added that the report indicates that no deposit has yet been met with which promises to be worth developing or to be likely to be mined with any measure of success, and the same is true of the non-metallic deposits—coal, of course, being always excepted. Deposits of gold, copper, tin, iron, manganese, chromium, lead and silver, molybdenum, of limestone, phosphate, graphite, asbestos, gypsum, salt, nitrate, oilshale and petroleum, building stone, slate, clay, &c., are known to exist and have here been reported on, but nothing of commercial value seems to have been met with anywhere. The value of the mineral output of Natal for 1908 is given as 741,158*l.*, out of which the value of the coal is 737,169*l.* Further comment is needless.

*Modelling from Nature. A New and Original Method of Clay Modelling.* By Lilian Carter. Pp. 32; and 16 plates of models copied from nature. (London: Cassell and Co., Ltd., n.d.) Price 1*s.* 6*d.* net.

THOUGH we are sceptical as to the newness and originality of Miss Carter’s method of teaching clay modelling, there is no doubt that work of the kind she describes interests young children, and assists in making them accurate and alert in examining natural objects, as well as deft with their fingers.

*The Time of the Singing of Birds.* Pp. 126. (London: Henry Frowde, 1910.) Price 3*s.* 6*d.* net.

THIS anthology of verse will appeal to all bird-lovers. Three compilers have been able, with the cooperation of authors and publishers, to bring together a charming collection of modern poems, as well as the better known older verses dealing with bird life.