

discrimination. Other things being equal, sulphate of ammonia is more suitable than nitrate of soda for use in the West of England, whereas the order is reversed in the drier climate of the Eastern districts. The behaviour of soluble plant-food under the influence of heavy rainfall should be considered by farmers in purchasing their supplies of spring manures. The excessive rainfall of the past winter—especially coming, as it did, after a long period of drought—must have very seriously depleted the soil of its natural nitrates, so that increased purchases of active nitrogenous manures for the crops of the current year are clearly indicated.

Let us hope that the reception given to the present volume will induce the author to proceed, without delay, to redeem his provisional promise of a work on the cognate subject of the chemistry of soil. W. S.

*Electric Wiring, Fittings, Switches and Lamps.* By W. Perren Maycock, M.I.E.E. Pp. xv + 446; with 360 illustrations. (London: Whittaker and Co., 1899.)

*Electric Bells and Alarms.* By F. E. Powell. Pp. 77; with 51 illustrations. (London: Dawbarn and Ward, Ltd.)

MR. PERREN MAYCOCK, who has already written a number of excellent text-books on electrotechnical subjects, has produced in the present case a book which, while offering no particular attractions to the non-technical reader, undoubtedly serves the purpose for which it is written; namely, to give a thorough idea of present practice in the electric lighting of buildings. The book is the more welcome since the widespread introduction of 200 and 220 volt lamps during the last three years has rendered all books dealing with electric-light fittings written previous to that time seriously out of date. It is not merely the perfecting of the 200 volt lamp which has rendered this change possible. The design of lamp-sockets, switches and fuses has been of late much improved. The fewness of parts, the simplicity of construction, and the ease and security of wiring of the modern lamp-socket are in striking contrast to the older fittings. These improvements, though apparently trivial, are none the less important.

Another change of the last few years has been the gradual displacement for all but street lighting of the open arc by the enclosed arc lamp, with its greatly lengthened arc and its increased electromotive force and reduced current. Mr. Maycock's passing description of the Nernst lamp reminds one that that most promising novelty has not yet made its *debut* as a commercial article.

The illustrations to the text are numerous, and the sectional drawings on the whole very clear. The practice of taking illustrations largely from manufacturers' trade-lists, which is usually to be deplored, is in the present case justified. In no other way could the fittings at present available be properly described. We recommend Mr. Maycock's book as the best we have seen on the subject.

Mr. Powell's unpretentious little book or pamphlet on electric bells and alarms forms No. 3 of the "Model Engineer" series. It furnishes the reader with an attractive and satisfactory account of the various forms of a most useful, if humble, piece of electrical apparatus.

D. K. M.

*Report of the Marine Biologist for the Year 1898. Cape of Good Hope Department of Agriculture.* Pp. v + 362. (Cape Town: Richards, 1899.)

THE Cape Government is to be congratulated upon the success which has attended its efforts to investigate the sea-fisheries of the Colony. Dr. Gilchrist, the marine biologist who was appointed to inquire into the best means of developing the fisheries, was undoubtedly well

advised in securing, at the very commencement of his undertaking, a properly equipped steam fishing vessel of sufficient size and power to safely keep the sea, and the results recorded in the present report justify, in a manner almost beyond what could have been anticipated, the expense which the purchase and up-keep of such a vessel has entailed. It has been clearly shown that the seas around the Cape of Good Hope contain a vast source of unexploited wealth, the development of which would provide a valuable and healthy addition to the food-supply of the people. So far as can be gathered from the report, the only difficulty to be contended with is that of getting the fish to the centres of population in a fresh condition. With a climate such as that of Cape Colony it would seem that the best means of overcoming this difficulty is by the use of refrigerating chambers both on the fishing-vessels themselves and on the trains used for transporting the fish by land.

The present report does not attempt to deal with the more scientific aspects of fishery investigation, although there is evidence that this side of the question is not being altogether neglected. It is of the greatest importance that the newly discovered fishing-grounds should be very thoroughly investigated at the present juncture, before much fishing has taken place upon them, and this investigation should deal, not only with the fish population, but quite as thoroughly with the lower forms of life, which are the food of the fishes. Such an investigation will be invaluable in after years, as it will make it possible to ascertain exactly what influence constant fishing has produced, and many evils which have arisen in the European fisheries may be avoided. It is greatly to be desired that the Government of the Cape of Good Hope will show themselves sufficiently enlightened to realise the immense value of accurate scientific investigations at the present time, and the unique opportunity which they now possess—an opportunity which will probably never return—of developing their fisheries upon sound and scientific principles, based upon a trustworthy record of facts. E. J. ALLEN.

*Science Course for Secondary Schools.* By G. Robb and J. Mirguet. In Three Parts. I. "Practical Physics," pp. 167; II. "Notions of Physics," pp. 247; III. "Practical Chemistry," pp. 182. (Cairo: National Printing Office, 1898-99.)

THESE three small volumes have been specially compiled to meet the requirements of the Science Syllabus prescribed by the Ministry of Public Instruction to be used in the Secondary Schools under the management of the Egyptian Government.

Part i., "Practical Physics," consists of a series of experiments illustrative of the initial phenomena to be observed by the elementary pupil during his first year. The plan adopted is to first describe an experiment, and afterwards enunciate the law to be associated with it. The first five chapters deal with measurements of length, area, volume, force and weight, succeeding chapters being devoted to density, composition of forces, centre of gravity and equilibrium, properties of matter, elementary hydrostatics and theory of gases. The text is sufficiently ample for clearness without being so detailed as to take the place of a text-book.

Part ii., "Notions of Physics," is in effect a text-book for the assistance of second year pupils in following the series of demonstrations given by the teacher, which constitute the whole of the second year's course. If, as the author's statement appears to indicate, it is a fact that for a complete year the students simply attend a course of experimental lectures without doing *any* practical work themselves, this would hardly, according to modern views, be consistent with the pupils obtaining the maximum advantage from their instruction. The opening chapters deal with the phenomena connected