as to dangle or float on the water, the bags being pierced with small holes by a sail needle, through which the oil slowly exudes. These bags are placed in different positions, according to whether the ship is flying before the tempest, or lying-to comparatively motionless. This simple appliance is therefore within the means of every ship, and there can be little doubt that already many vessels owe their immunity from damage, and in some cases even their safety, to its employment.

Among remarkable instances of saving life, is one, cited by Admiral Cloué, of the boats of a ship burnt in 1885, 800 miles from the Seychelles Islands, in which the crew were making their way to land. A cyclone was encountered, which raised a terrific sea, but the boats, provided with oil by the prescience of the captain, weathered it out in perfect safety for sixty hours, riding to a floating anchor of their masts and oars, to which was attached a bag of oil.

Our author points out that from the time of Pliny oil has been thus used, but only by small communities, or by individuals, whose efforts to bring it into general use have always failed. Benjamin Franklin presented a paper on the subject to the Royal Society of London, which is printed in the Philosophical Transactions, 1774, but it remained without fruit.

Experiments were carried out in this country in 1883 by Mr. Shields, at Peterhead and Folkestone, with a view of diminishing the heavy sea at the entrance of these harbours. These experiments were successful, but at the expense of a great quantity of oil; the fact being that the conditions of breaking seas in shallow water are totally different from those in the open ocean.

Admiral Cloué remarks on the great utility of oil when wrecks have to be boarded; and suggests that the builders of rock lighthouses, when their work is delayed by the difficulty of landing material, might find it to be of much service.

The general application of oil is in fact yet in its infancy, and everyone must welcome any such good collection of facts, and of suggestions tending to extend its sphere of usefulness, as that given in "Le Filage de l'Huile."

W. J. L. WHARTON.

OUR BOOK SHELF.

Comparative Morphology and Biology of the Fungi, Mycetozoa, and Bacteria. By A. De Bary. Translated by Henry E. F. Garnsey, M.A. Revised by Isaac Bayley Balfour, M.A., M.D., F.R.S. (Oxford: Clarendon Press, 1887.)

ANYONE acquainted with the numerous researches of De Bary, published in German, will readily indorse Prof. Balfour's remark in the preface to this English translation, viz. "it brings within reach of all English-speaking students the most thorough and comprehensive treatise upon these groups which has appeared in any language," and after perusing this volume we should add that "a finer volume, and a more handsomely and exhaustively illustrated one," is not known in the literature of this subject.

The book seems to us more like a well and comprehensively arranged collection of classical monographs on Fungi and allied organisms, written by a master mind, translated by a scholar, and revised and edited by a practical worker and teacher of these subjects.

It is difficult to pick out any one chapter in which this is not conspicuous. The array of facts, and of phenomena as to form, growth, and development of Fungi, and minute details bearing important relations to one another and to the whole, are told with singular lucidity and in comprehensive sequence; and numerous suggestions that at once engage and invite the reader's and student's inquisitive mind are everywhere, almost on every page, to be met with. As the title of the book indicates, the subjects of Fungi, Mycetozoa, and Bacteria are each separately treated in the first, second, and third parts of the volume respectively.

As was to be expected from De Bary's researches, the first part forms the bulk of the volume. As far as our present knowledge of the ever-enlarging subject of the thallus, spores, and development of Fungi goes, hardly anything could be added to make the book complete both for students and workers; but we venture to think that in Chapter V., besides the important bibliography added to the description of the different groups of Fungi, an appendix setting forth briefly the various species hitherto recognized, not only in name but also in distinguishing characters, would be a valuable addition.

This is still more the case in the third part—Bacteria. We doubt whether this will advance the knowledge of the student beyond a general insight into the nature and mode of life of Bacteria, though he will find here a most valuable and suggestive account of the different modes of spore-formation.

The illustrations are very numerous and well rendered. The bibliography in the first part (Fungi) is carefully and judiciously arranged.

As to the translation little need be said. It is excellent, and the book reads more like an original than a translation, if it were not that one is repeatedly reminded of the contrary by the presence, after an exact rendering in English, of the original German. There seems to be really no necessity to put (p. 1) after filamentous Fungi (*Fadenpilze*); (p. 2) after compound Fungus body (*Zusammengesetzter Pilzkörper*); (p. 4) after sprouting Fungi (*Sprosspilze*); (p. 73) endogenous spore-formation (*Endogene Sporenbildung*); (p. 84) solution or gelatinous swelling (*Auflösung, gallertige Verquellung*).

Why should (on p. 110) to "tube germination" be added (*Schlauchkeimung*); to "sprout germination" (*Sprosskeimung*); to "germ tube" (*Keimschlauch*)?

It is different with "abjunction" and "abscission" explained on p. 61 in a footnote, for here confusion might arise as to the exact meaning of the German "*Abgliederung*" and "*Abschnürung*."

The "Explanation of Terms" at the end of the volume is in this respect most welcome. E. KLEIN.

Emin Pasha in Central Africa. A Collection of his Letters and Journals. Edited and Annotated by G. Schweinfurth, F. Ratzel, R. W. Felkin, and G. Hartlaub. Translated by Mrs. R. W. Felkin. (London: George Philip and Son, 1888.)

THE personal interest connected with this volume is even greater than its scientific interest. Emin Pasha already ranks as one of the heroes of the modern world, and the record of the bare facts of his career has all the fascination of a good romance. Appointed in 1878 to be Governor of the Equatorial Province, he ruled his territories with astonishing vigour and discretion, so that in 1882 he was able to report that slave-dealers had been wholly banished from his borders, and that the people subject to him were prosperous and contented. The troubles in the Soudan created for Emin many most formidable difficulties, but his courage never failed him, and we may hope that long before this time he has been stimulated to fresh hope and activity by aid received from Mr. Stanley. The letters translated in this volume begin with one dated Dufilé, July 16, 1877, and include several received