

lowing out his own interest as he views it, will at the same time always promote in the most efficient manner the public interest. In speaking of ownership in natural agents, he remarks (p. 81) that "under our actual system the care which every prudent person takes of his own property is extended by the owners of natural agents to their property, and thus the contents of the great store-houses of nature are protected from waste." Surely the author knows of the great devastation of our forest lands by private owners, bent on following their own interest to the exclusion of that of the public. He has surely heard of the revelations recently made in England and Ireland which showed that the productiveness of agricultural lands was permanently lowered by the policy of interference adopted by the landlords, and which led to most vigorous restrictions on freedom of contract in the interest of the community. Surely the author knows that in nearly every state in the union it has been necessary to pass laws for compulsory drainage of swamps, whose owners refused in some cases to have them drained at all, even at others' expense. These are illustrations of a law very different from that enunciated by the author, and that is, that the interest of the individual diverges at a thousand points from that of the whole, and that positive legislation is needed at all times to secure the interests of the latter as against the former. Professor Newcomb himself, indeed, almost immediately takes back the statement quoted above by admitting that we have to depend upon law and public opinion to control private interest; but as he repeats the former statement in many different forms, and founds his whole system of *laissez-faire* upon it, we must accept it as his real view.

As a fair specimen of the mode of reasoning, we may refer to the investigation begun on p. 513, as to whether "any system intended to limit the liberty of any man to acquire all the wealth he can by legal means, and to employ it in the way he chooses, can conduce to the general good." The question, as stated, involves a *petitio principii*. By *legal* means? What does this phrase 'legal' mean? It is evident that the author is thinking of the means which are legal under our present system of laws in this country. But he is trying to get formulas for a general political economy which shall hold good of present, past, and future societies alike, and our laws are not the same as they were a century ago, or as they will be a century to come; nor are they the same as English or French or German laws. Nobody denies a man's right to get all he can by legal means, but very many people deny that certain means now legal

are judicious, and promotive of the public good. The author evidently goes upon the assumptions that our present laws are just and natural, and that any thing which is legal under them is also just and natural,—two assumptions which constitute the whole point in dispute. He sums up the discussion in the remark that "the fact is, that on our present system the enjoyment of the collected wealth of the community is as nearly in accord with the ideal principles of equity as any general system can be." This sounds like a voice from the dead. It is worthy of the worst period of 'Manchesterism.' It is this kind of political economy, which, regarding the case as closed in favor of the existing order in its present form, has done and is doing more to promote the most dangerous type of communistic and socialistic spirit and doctrine than all the vaporings of so-called professorial socialism of the last generation. Even John Stuart Mill declared that communism or socialism could not be any worse than the existing order, if this order is capable of no improvement.

If, passing over this fundamental view, which is, of course, the most important consideration in the case, we look at the details of the book, we shall find much to admire. The qualities which have made the author one of the most eminent astronomers of this generation serve him a good turn in his discussion of several of the most important topics. There is a general tone of fair-mindedness which is often lacking in works written from the general stand-point of the author, and which makes one only regret still more keenly the author's lack of special knowledge, which, if it had been supplied, might have given us a really valuable work. Some misstatements of facts should perhaps be noticed. The discussion of the national banking system was evidently written several years ago, and not revised to date. There is an unhappy confusion of the labor party with the socialists, which again reveals the author's ignorance of actual facts in the social organism of which he treats. In his discussion of bimetalism, he says that the government goes on the assumption that "the values of equal weights of the two precious metals have a certain fixed ratio,"—a statement which is not true as a matter of fact, and is a gross caricature if intended to represent the views of bimetalists.

E. J. JAMES.

#### TEXT-BOOK OF BOTANY.

NOTWITHSTANDING the rapid multiplication of text-books within recent years, it is a pleasure to

*Gray's botanical text-book. Physiological botany, part ii.* By G. L. GOODALE. Philadelphia, Ivison, Blakeman, Taylor, & Co., 1885.

welcome this new work on botany as a most acceptable contribution to our resources for instruction. Part i., devoted to histology, has already been noticed (*Science*, vol. v. p. 157), and it only remains for us to direct attention to the larger part of the complete volume, part ii., devoted to physiology.

The present volume is especially welcome from the fact that it is the finest work of the kind published in this country. The nearest approach to it is the text-book by Dr. Bessey. Until now we have been obliged to depend upon reprints from the German for all text-books upon this very important department of botanical science; but it is to be hoped that the issue of the work before us is indicative of a permanent change in this direction, and that for the future we may have standard text-books capable of bringing the student into intimate acquaintance with the most recent acquisitions.

In its general make-up, the book is very creditable, and a decided improvement upon the usual appearance of text-books. The paper and letterpress are good; while the figures, of which the publishers have granted the author a fairly liberal allowance, are fresh, — an evident effort having been made to avoid stereotyped illustrations, — and in most cases admirably well executed. The references to the literature of the various subjects treated are quite full, and will be found a most valuable aid to the student, as also will the large amount of additional matter embodied in the footnotes. The student is also provided at the end of the volume with a large number of suggestions as to the apparatus and materials required in both histological and physiological studies. Also, as of special advantage to those wishing to follow an independent course of study, there are many valuable suggestions as to the subjects which may be most profitably considered. Valuable as such suggestions are, however, they can only serve as a basis; and the student must of necessity outline his own course to a very large extent, since he would otherwise find it physically impossible to accomplish all that might seem desirable.

The author has endeavored to leave no important physiological fact without discussion, while his entire treatment of the subject as a whole will commend itself to teachers generally as clear and logical, although in many instances there appears to be a lack in fulness of treatment which would be highly desirable, but which would hardly be practicable in the limits of a book designed for an ordinary course of instruction.

In some instances, however, this becomes a fault, since the abbreviations are sometimes carried to such an extent as to give the student an

imperfect conception of the subject discussed. Such, however, are minor faults, and are almost inseparable from necessary curtailment of discussion. They all readily disappear under the guidance of a competent teacher, and the author is certainly to be congratulated upon having reduced errors of all kinds to a minimum. While giving the most recent views obtained, the author wisely errs on the side of prudence in not allowing himself to give too great weight to opinions which are not fully justified.

Our knowledge of both histology and physiology is now advancing at such a rapid rate, that many errors of omission, and possibly, in some cases, of fact also, are almost inseparable from a work of this kind. The time which elapses between the reception of the manuscript by the publisher and of the book by the public, is sufficient to make many statements old, and often to upset previous views. Bearing this in mind, the book is fully up to the times, and we can commend it as destined to meet in a most acceptable manner a long-felt want.

#### HORNADAY'S TRAVELS IN BORNEO.

ALL things considered, this is one of the most satisfactory books of its kind that we have seen for many a day. Its author possesses to a marked degree the happy but rare faculty of knowing just how much science the general reader likes to have mixed with his narrative, and also how to give it to him without missing either the science or the narrative. Mr. Hornaday's style is none of the best, but there is such a freshness, such a genuine ring, and such a realness to his narration, that one is willing to overlook his many deficiencies in the art of expression, his numerous inelegancies, and even his incessant use of slang words and phrases. In fact, the most serious objection we have to the book lies in another direction, and is something for which the publisher is more to blame than the author. We refer to its weight, — a little less than three pounds avoirdupois. Now, there is no objection to printing dictionaries and other works of reference in large, heavy tomes. Such books are designed merely for reference, and can be used when lying open on a table or book-rest. But when it comes to asking one's readers to sit solemnly down to a narrative of sport and adventure as to a Webster's unabridged or a consular report, it is asking too much.

Mr. Hornaday's journey to the jungle — which simply means woods — was undertaken for the purpose of procuring specimens for Mr. Ward's

*Two years in the jungle.* By WILLIAM T. HORNADAY. New York, Charles Scribner's sons, 1885.