

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.

well-known establishment at Rochester. From a commercial point of view, the venture must have been very successful, although our author was compelled, while in Ceylon, to bottle his snakes and fishes in methylated spirits, upon which the Ceylon authorities had collected a duty of four hundred per cent. He protested in vain, for the money had been paid by his bankers before his arrival on the scene, and the customs authorities refused to refund, even when he offered "to take the unlucky case of spirits through the custom-house, and bury it in a quiet corner of the back-yard, where it would not smell bad." The officers only replied, 'Couldn't do it, couldn't do it.' 'They had those rupees,' our author declares, 'and meant to keep them.'

Naturally, in the course of two years in the jungles of Ceylon, India, Selangore, and Borneo, one has many hair-breadth escapes. But the adventure, which he asserts was "ten times more dangerous than any I experienced with the head-hunters of Borneo," was experienced much nearer home. It was while engaged in skeletonizing some jackasses in the Emerald Isle that he was set upon by 'a mob of wild Irishmen,' who assailed him with long-handled hoes, on the ground that the donkeys had been murdered. He was finally allowed to depart by stealth, after having been boycotted for a few days, with his own bones intact, but without his asinine skeletons. These quotations will serve to show not merely the author's unhappy lack of skill in expression, but also the pleasant and truly American way he had of looking on mishaps which would have driven the average British sportsman to the *Times* or an insane-asylum.

One of the quaint features of the work, and one which we should have been very sorry to miss, is the way in which he loses the sportsman and narrator in the collector, and naïvely tells us where this or that stuffed effigy can be found. Thus, after describing an elephant hunt, and the subsequent skinning at a time when the elephant was several days older than when he died, he adds, "The old tusker, who fell under such romantic circumstances on the Animallai slope, now stands, still 'the monarch of all he surveys,' in the Museum of comparative zoölogy of Harvard university, Cambridge, Mass.

The whole volume is entertaining, though the most interesting portion, perhaps, is that wherein Borneo, with its head-hunting Dyaks, its tree-jumping gibbons, and its unpleasantly human orang-outangs, is described. Without disparaging the work of Wallace, Bock, and others, this is the best description of Borneo, so far as it goes, to be found in the books. Our author views the Dyak

in the innermost recesses of his house, and tells us how he eats, drinks, sleeps, dresses, and earns his living. It is worth noting that Mr. Hornaday takes issue with Wallace as to the maximum height of the orang-outang, which Wallace gives as four feet and two inches. Our author and his hunters killed or captured forty-three, no less than seven of which measured more than four feet two inches; one, a *Simia Wurmii*, measuring, when fresh, four feet and a half from the top of his head to the sole of his foot.

We wish that there was space to describe the manner in which Mr. Hornaday captured crocodiles with hook and line, and many other curious feats; but it is impossible. The book is finely illustrated with sketches, photographs, and a few other pictures. It further contains two moderately good maps, and but for its bulk would be a most welcome addition to the library.

ASTRONOMICAL NOTES.

First observation of Nova Andromedae. — The earliest observation of the new star, thus far reported, was by M. Gully, director of the public observatory at Rouen, on Aug. 17; and as M. Tempel, director of the observatory at Florence, affirms that it was not visible on the 15th and 16th, we are not likely to get much nearer the time of its first appearance. In *l'Astronomie* for November, which gives the above facts, M. Trouvelot also states that a 13 mag. star, which precedes the *nova* about 20^s and is a little south of it, and which is now visible with an 8-inch, is not put down upon a drawing of the nebula which he made in 1874 with the 15-inch of the Harvard college observatory, and that he does not think it could have escaped him if as bright then as now. It would seem as if this nebula were an object that should be watched pretty constantly, and of which a series of comparable photographs at stated intervals would be especially valuable.

Wire-gauze screens as photometers. — Of late years the use of wire-gauze screens, one or more in number, over objectives, has come into use for several purposes. Over one of the halves of a heliometer-objective they are used to reduce the image of a bright star to approximate equality with that of a fainter star from the other half, an essential condition for the most accurate superposition of the two images. With a meridian-circle they are used to reduce the brighter stars to an approximate equality with the faintest that can be observed with satisfactory precision, or to investigate the difference of personal-equation for different magnitudes by taking different tallies of transit-wires, with screen off and on, at the same