

Most scientific astronomers, observing such a regular figure for the first time, would at once look for some ordinary physical explanation of its presence, even as they now try to explain the shapes of the planets; and, failing to find such an explanation, they would be content to call the triangle a mystery. Only some man whose position as a public lecturer on astronomy demanded that he should have a new sensation ready for each new lecture-season would be apt to insist on the existence of some set of geometrically disposed planetary giants. More sober people would be content with an *ignoramus*. But how much less satisfactory becomes such an induction when applied to the whole of nature! At best would not such an argument be like the inductive reasoning of a man, who, having already learned the modern doctrine of the relation of the colors of flowers to the habits of insects, should for the first time, and without any previous knowledge of marine zoölogy, find a colored shell by the sea-shore, and who should then at once expect to find some race of insects in some analogous relation to the inhabitant of this shell? Or, again, if one extended even to the rainbow, or to the sunset, an explanation derived from the case of colored flowers, and their relations to insects, would not the argument possibly be no more absurd than the induction upon which Mr. Hicks lays so much stress? Men and beavers and other creatures make orderly groupings of things. Hence order implies intelligence, and that wherever we find order. Is this argument any better than the old teleology? Mr. Hicks is deceived, it would seem, by the vast wealth of facts to which his argument appeals. He neglects the difficulty of bringing such various facts within the control of an induction that has for its narrow basis such intelligent activity as we see about us among men and animals. As induction, pure and simple, eutaxiology seems to us simply worthless.

But is the order argument in any form therefore worthless? Certainly not. Mr. Hicks does fine service in bringing before the public, just at this moment, a thought that is by no means new, and that is profoundly suggestive. 'What does the order in the world imply?' This is a great question, not of inductive science, which is concerned solely with discovering the actual order itself, but of general philosophy. And Mr. Hicks is, we doubt not at all, quite right in saying that order implies intelligence. But how, and what intelligence? Such questions he leaves wholly unanswered. The critical philosophy of Kant would, strictly

speaking, affirm that order in the world implies only the intelligence of the thinking subject to whom the world appears. The world is orderly, because only as orderly could it become known to an intelligent being. Not the world in itself, but the world for thinking beings, is to be viewed as orderly. This view would make short work of our author's 'induction,' but it would not satisfy him. He would then need to know and build beyond Kant. In short, Mr. Hicks has very ingeniously set his reader down at the beginning of a great philosophic problem. It would argue a lack of intelligence in the reader if he did not seek to bring his thoughts into a better order than that in which Mr. Hicks will have left them; and the author's service lies in making it impossible for an inquiring mind to rest content with what is here offered to him. This, however, at least, he has very well suggested, though he has not proved his suggestion: viz., that the postulate of natural science is the rationality of the world. Whether we find order, or only seek it in nature, we are always *a priori* sure that the world is actually full of connections that admit of expression in rational terms, of explanation to an intelligent mind. And so we assume a fundamental likeness of nature and intelligence that suggests to us very strongly some kind of real unity or identity of nature and intelligence. But whether this suggestion has any ground, whether this identity of nature and mind is to be accepted at all, or is to be accepted in Kant's sense only, or in Berkeley's sense, or in Hegel's sense, or in some other sense, this is a matter for philosophy to discuss. We thank Mr. Hicks for having shown afresh the necessity for such discussion. His eutaxiology is not so original as he thinks; but his offering on the altar of philosophy deserves the reward due to every gift that a special student of natural science finds time to offer in the true spirit of calm investigation.

MAYNARD'S MANUAL OF TAXIDERMRY.

Manual of taxidermy; a complete guide in collecting and preserving birds and mammals. By C. J. MAYNARD. Boston, S. E. Cassino & Co., 1883. 16 + 111 p., illustr. 12°.

A REALLY *complete* guide in collecting and preserving the objects named in the title of this work, which can safely be relied upon for information under all circumstances and in all climates, has long been sorely needed by the host of amateurs, taxidermists, travellers, and even professional naturalists interested in verte-

brate zoölogy. Notwithstanding the presence of the neat little volume before us, and its promising title, a complete guide is still as much a desideratum as ever. Like all other books which have appeared in English on this subject, this volume is small and thin, and, we are compelled to add, wretchedly illustrated. Of the one hundred and one pages of subject-matter, sixteen are frittered away in an effort to inform the reader where birds of the various families from Turdidae to Alcidae are to be found. How much better to have devoted this space to adequate instructions for mounting dried skins, which important branch of the subject is summarily disposed of on a single page, instead of to such cheap information as that 'the chimney-swift inhabits chimneys,' that kingfishers are found 'in the vicinity of streams,' and the like. With the exception of the above, all the information and advice contained in the chapter on collecting is valuable, and bears the stamp which experience places upon its work.

The chapters on 'skinning birds' and 'making skins' would be very satisfactory but for one thing. While the author strongly condemns dry arsenic as a dangerous poison, and says not a word about arsenical soap, the only preservative he recommends as fit for use is one compounded only by himself. After extolling its virtues to the extent of two pages, but carefully withholding all information as to its composition, he coolly informs the reader that its price is 'twenty-five cents per single pound.' We are told that tannic acid, alum, salt, or black pepper (!) may be used to temporarily preserve skins until the other can be procured. The 'dermal preservative,' which, strange to say, is not a poison, is recommended, or rather exclusively directed, in no fewer than fourteen places throughout the work, for mammals, birds, reptiles, and fishes, as a non-poisonous astringent, absorbent, deodorizer, and insecticide; and, if the reader is at all credulous, he will be led to exclaim, There is but one preservative, and C. J. Maynard is its maker! If this little book is honestly intended to meet the wants of amateur collectors wherever it may find them, and not to increase the sale of a nostrum of doubtful value, nor to advertise the author's business, the author has taken a queer way to show it. It will not be surprising if his readers resent such unfair treatment.

While there is much that is practical, valuable, and new in the chapter on mounting birds, and in those detailing the treatment of mammals, reptiles, and fishes, they are all deplorably incomplete; and we vainly regret that the

author did not go as deeply into the subject, and with as good diagrams and illustrations, as he might have done. The information given is valuable as far as it goes; but there are only one-quarter as many facts stated, and directions given, as the unskilled operator needs to know.

As an example of the doubtful value of such highly condensed instructions, we may take those for skinning small mammals. The author says, "... peel down on either side [of the body] until the knee-bones are exposed, then cut the joint, and draw out the leg, *at least as far as the heel.*" Not a word is said about skinning the foot, and removing the flesh under the metacarpal and metatarsal bones: hence we suppose it is left to decompose, which it will generally do right speedily, and at the expense of the hair and epidermis above. We should like to see the author remove and prepare the skin of any monkey according to his own directions.

We are honestly sorry we cannot freely recommend this manual — nor any other in our language, for that matter — as being well calculated to meet the wants of those for whom it is intended. An epitome of the subject is no longer wanted, but a handbook which shall be really complete is needed very much.

ELEMENTARY TREATISE ON THE MICROSCOPE.

Traité élémentaire du microscope. Par EUGÈNE TRUTAT, Conservateur du musée d'histoire naturelle de Toulouse. Paris, Gauthier-Villars, 1883. 322 p., 165 ill.

Few are aware of the magnitude to which microscopical work has grown. The modern methods of research in the physical and biological sciences have involved more and more an appeal to the microscope. As a result of this growth, we find whole volumes devoted to a description of the microscope and its application to the various departments of study.

Microscopy has been taught in our schools only a very few years. This is partly due to the fact that formerly the instruments were both expensive and imperfect. There was also an almost total lack of literature upon the subject. At the present time, however, there are plenty of good works on microscopical technology, and the microscope as applied to the study of medicine in all its branches, including biological research.

In a work like this before us, it is necessary to present a large amount of material of such an elementary character that it is of value