described. The posterior so-called "anal pit" is said by Ikeda to be the Anlage of the nephridia, and to have no connection with the so-called "primitive streak." In many details Ikeda's results differ from those of Masterman,—especially in many of the points which the latter emphasizes as indicating affinities with the Diplochorda. Thus, Ikeda considers as artefacts, due to reagents, the oral and pharyngeal grooves which Masterman had compared with gill slits, the "neuropore," the "subneural gland," and certain parts of the vascular system described by Masterman. He was further unable to find the "proboscis pores" of Masterman, the "trunk nephridia," the ventral blood vessel, the dorsal mesentery, the collar nerve ring, the ventral nerve commissure, or the perianal nerve ring. The impression is thus given that his results are largely opposed to those of Masterman; the latter, however, points out in a recent review of Ikeda's paper that in regard to the fundamental structure of Actinotrocha the points of agreement are more important than those of disagreement; indeed, he claims Ikeda's work as a corroboration of his own.

Ikeda has given especially valuable observations on the relation of the body cavities and vascular systems of the adult to those of the larva,—a complex matter, on which little had been done, and which perhaps requires still further elucidation. The vascular system of the larva is very simple as compared with that of the adult, not forming a closed system at all; the transformation of the one into the other in the fifteen or twenty minutes occupied by the metamorphosis is therefore a complicated matter. In the same way the body cavities of the larva and adult by no means correspond. Ikeda states that the collar cavity of the Actinotrocha is largely transformed into the "ring vessel" of the adult,—the collar cavity of the latter being largely a new formation.

H. S. J.

A General Course in Insect Anatomy.—This is a new edition of a little book that is important both of itself, and because it represents the fundamental laboratory course in the chief center of entomological instruction in America. The book has been evolved along with the laboratory which it represents, and each new edition marks progress in the knowledge of even those subjects which are dealt with in the most elementary instruction.

The changes to be noted in this edition are not very extensive. External anatomy is studied in grasshopper and beetle; internal anatomy, in the larvae of Corydalis and Holorusia; there are two chapters devoted to comparative anatomy of mouth parts and wings; there is a brief opening chapter on terminology, and another concluding one on methods of insect histology. The growth of eleven pages is chiefly due to the (new) chapter on the anatomy of the larva of the giant crane fly (Holorusia) by Professor Kellogg. This chapter, proposed as an alternative to the one on Corydalis, is a very desirable addition whether Corydalis be obtainable or not. Such statements as this, “The internal anatomy of all insects is exceedingly similar,” continue to be repeated in the latest text-books of zoölogy; but it would seem that even the average “pure morphologist,” for whom one grasshopper constitutes an entomological summer, should eventually learn their absurdity.

In the old chapters there are new paragraphs here and there. In the study of even such well-worn subjects as the skeleton of the grasshopper the discovery of new sclerites still goes on. Thus, in the last edition were noted for the first time sternal and sternum, and in this one we note such new parts as trochantin of the mandible and antennary sclerite, etc.

For a simple, straightforward, condensed guide to the laboratory study of elementary insect anatomy, there is no such book elsewhere.

J. G. N.

The Breeding Habits of Cancer magister. — In 1884 Prof. J. Brown Goode wrote¹ concerning Cancer magister: “Nothing is known regarding the spawning season and habits of this species. The occurrence of a female with spawn in the San Francisco market has not yet been recorded by any naturalist.” This last statement is still true, there being no scientific record, so far as I can learn, of the capture of this crab while it was carrying eggs. This is rather remarkable, since Cancer magister is the largest of the edible crabs of the Pacific coast of the United States, and extends from Sitka on the north, as far as Magdalen Bay, Lower California, to the south. In San Francisco Bay and vicinity they are common, and thousands are annually brought to the markets, where they hold as important a position as does Callinectes in the commerce of the eastern seaboard.

¹ The Fisheries and Fishery Industries of the United States. Section 1, Natural History of Useful Aquatic Animals. 1884.