advantages to science, both agricultural and to a less extent general, which would result, but because we believe such a course to be the only one which will lead to enduring popularity, or yield gains to agriculture commensurate with the outlay. We are confident, that, if Dr. Sturtevant will make it his avowed aim to do as much real scientific work as possible, the state will receive a far larger return for its outlay, and that within no long time it will acknowledge such to be the case; while the beneficial effects of such a course, in promoting an appreciation of and respect for true science among the people, would not be its least recommendation.

Agricultural experimentation is attracting increasing attention; and it seems important that a clear idea should be reached by those concerned in it of its proper aims and methods; and this can be attained in no better way than by a free criticism, on the part of all concerned, of methods and ideas which seem to them false or unwise.

HERRICK'S TYPES OF ANIMAL LIFE.

Types of animal life, selected for laboratory use in inland districts. By C. L. Herrick. Part i., *Arthropoda.* Minneapolis, 1883. 33 p., 7 pl. 8°.

The author says in the preface, that the notes which this work contains are only a small part of the material collected some years ago for a 'Laboratory assistant for western students, arranged upon quite a different plan.' During the delay in completing the proposed work, the great need of it has been in a measure supplied by recent works; but as these treat chiefly of marine forms, or such as require dissection, he has 'thought best to place at the disposal of students and teachers in summer science classes' his notes on such types as can be studied, while living, under the microscope. The types selected are the larva of Corethra, Canthocamptus, and Gammarus, which are described, without directions to the student, or explanations of methods of work.

A text-book of this kind ought to be clearly written, and accurate, a model for the student; but Mr. Herrick's work is far from this, and no better than we might expect to find the rough notes of the student in a 'summer science class.' The description of the heart of Chironomus, on p. 7, is throughout almost or quite unintelligible, and ends with the statement that 'the last chamber is closed behind, and has the ostia quite a distance beyond.' On p. 25 we have the opening of the green or antennal gland of Gammarus described as 'an auditory or other sensory organ;' and on plate 8, an antennula, or first antenna, figured, for comparison, as the 'second antennae of prawn, with auditory sac and secondary flagellum.' The Copepoda are Mr. Herrick's specialty, and so we naturally turn to the chapter on Canthocamptus for better work: but in the first paragraph we are told that the Copepoda are divided into three sections,—Gnathostoma, having 'the mouth-organs in the form of jaws;' while 'the other sections, Poecilostoma and Siphonostoma, have the mouth-parts more or less modified for piercing or sucking.' The student may search long and unsuccessfully to discover what the 'Poecilostoma' may be. In this chapter, also, we naturally look for some account of the 'heterogenesis' of which Mr. Herrick has written elsewhere, and find the following:—

"The young of Canthocamptus become fully developed sexually before they assume their final form; and it is not unusual to find females bearing egg-sacs which are not only much smaller than the parent, but with considerable differences in the various organs. This sort of heterogenesis is not uncommon among lower crustacea, for the mother may differ much from the young till after they have themselves produced young."

Grammatical, verbal, and typographical errors so abound that it is needless to point them out. The illustrations, engraved by the author himself, are for the most part far from accurate, and very rude.

WEEKLY SUMMARY OF THE PROGRESS OF SCIENCE.

ASTRONOMY.

Photographing the solar corona without an eclipse.— Dr. Huggins has continued his experiments on this subject during the past season. He has made use of a fine seven-and-a-quarter-inch speculum by the late Mr. Lassell (loaned for the purpose by Miss Lassell). Three inches and a quarter of the central portion only are employed, the light being received a little obliquely, so as to throw the image to one side, as in the Herschellian telescope, thus avoiding a second reflection. The absorbent screens of potassic permanganate, or blue pot-glass, have been dispensed with, and an emulsion, prepared specially