## ZOÖLOGY.[1]

SYNONYMOUS UNIOS.—The following synonomy is based upon series of shells received from Prof. Witter, Muscatine, Iowa, and Dr. J. Schneck, Mt. Carmel, Ill., purporting to be *Unio nasutus*. That both series represented the same species was beyond doubt, but that it was *U. nasutus* was as plainly to be doubted. From obvious resemblances they were compared with *U. nashvillensis* Lea, and *U. mississippiensis* Con., and the several series were found to be identical, and it was further established that none of them were *U. nasutus*. The comparison was based upon the position and form of the cicatrices, the size, position and angulation of the teeth, crenulation of the lateral teeth, color of the nacre and of the epidermis (after treatment with oxalic acid to remove ferruginous matter). Then came the query, "which is which?" The western collectors all call the shell *U. nasutus*, which is evidently incorrect. *Nasutus* is a flat, slender shell, and, like *U. complanatus*, belongs to the Atlantic slope, though both Mr. Lea and Mr. Say assert that "the species inhabits the western waters."

Mr. Lea in his Synopsis of the Unionidæ, p. 60 (note on *U. iris*), himself points out a possible solution. He says, "As the *U. nasutus* inhabits the western waters, a variety of that species may have been described by him (Mr. Say) for *subrostratus*." Here a thought suggested itself that both Mr. Lea and Mr. Conrad had described a *new species*, varieties of Say's older *subrostratus*. In my perplexity the shells were submitted to my friend Dr. Lewis, of Mohawk, N. Y., for further study and correction. We compared them with Say's description of *subrostratus*, with typical series of the other species mentioned above, and they were pronounced by him to be identical. Subsequent to this, after my arrival again East, Dr. Lewis writes (May 17, 1878), "I have got to the bottom of the synonomy of the shells you had from Dr. Schneck. He and many of the western collectors call the shell *wrongly U. nasutus* Say. It is *U. subrostratus* Say. Add to it the synonomy of *U. nashvillensis* Lea, and of *U. mississippiensis* Con., and you have it all complete." He further says, "Mr. Lea makes *subrostratus* a synonomy of *iris*. Lea followed Say, who was in error as to what was *iris*, which it is clear he had not seen." Say's *subrostratus*, therefore, stands as a good species, and, because of its priority of publication (1831), we must write as its synonyms *U. nashvillensis* Lea, and *U. mississippiensis* Con.

There is a marked difference in the outline of the shell in the sexes of all these species. Nor is this difference without marked prominence in the same sex, which, as Gegenbauer has shown (Comp. Anat., p. 318), must be regarded as caused by the relative positions of the various organs. Every one, who has dissected any great number of Unios, knows full well the differences in rela-

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Notwithstanding the work already done in the direction of synonomy, when a more complete knowledge of the anatomy of Unio is attained, and more is known of the modifications due to range and station, the number of species names will be sensibly diminished. This work will lie almost wholly in the line of their comparative anatomy and embryology. Not one organ, but all, must receive their due attention, then the external expression of these organs will be far more clearly comprehended.—*P. Ellsworth Call.*

The Westward Progress of the Imported Cabbage-worm.—In 1869, in my second report, in treating of this insect, I remarked, "There is every reason to fear that it may some day get a foothold in our midst," after showing that it was then confined to certain restricted parts of Canada and New England, and had not spread west of New York. It has been making further progress westward every season since. The past year it has done considerable damage as far west as Chicago, and I have also received good testimony that it was observed around St. Louis. I have given my reasons, in the report referred to, for believing that it will prove much more disastrous to the cabbage-fields around St. Louis than the Southern cabbage-worm (*Pieris protodice*), which has always been with us, and has done, at times, considerable damage, and I refer those who wish to be prepared with a full knowledge of the habits of this species, to that same report.

As remedies, few liquids will prove more effectual than hot-water, judiciously ap lied, though one pound of whale-oil soap dissolved in about six gallons of water, or even strong tar-water may be used to advantage. The application should be made several times during the year, as it will be most effectual when the worms are young.

As preventive measures, the worms may be induced to transform under flat pieces of board laid upon any object that will raise them about an inch from the surface of the ground. These boards should be examined every week, and the transforming larvæ or the chrysalids destroyed. The butterflies may also be captured by hand-nets and prevented from laying their eggs.—*Prof. C. V. Riley before the Mo. State Hort. Soc., Jan.* 1879.

Parthenogenesis in the Honey-bee.—In the article in the April American Naturalist, p. 261, copied from the *Comptes Rendus*, we have illustrated the danger of hasty generalization. The writer of the article suggests that the "Dzierzon Theory" rests on insufficient observation. This is far from the truth. The closest observation not only by German but also by many American apiarists, not only of one queen and her progeny, as was the

case with the author of the article, but of hundreds, has placed Dzierzon's theory on a certain basis. The writer says, referring to his single hive, "from this it is evident that the drone eggs, like those of the females, receive the contact of the semen deposited by the male in the female organs."

It is well known that virgin queens will lay eggs that will produce exclusively male bees. I have seen several such cases. I have known queens reared late in autumn to pass the winter as virgins and ever after to produce only male bees. Deformity of the queen, or clipping her wing while yet a virgin, so that she may be unable to take the "marriage flight," precludes mating, and as surely makes a "drone laying queen." Old queens with shriveled spermathecas are often drone layers.

How did the writer know his queen in question was not a hybrid? He could not know. Many hybrid queens are to all appearance perfectly pure. Again, how did the writer know that the drones were hybrids or blacks? Frequently the drones of our queens imported right from Italy, like the queens, are almost as dark as the drones of the German race, yet the three banded workers show the queen to be pure. One case alone, however striking, should not be regarded as fatal to so well established a theory. The case given, so far as given, is no evidence against parthenogenesis of the drone bees.—*A. J. Cook.*

Perez' paper in the *Annales des Sciences Naturelles* for April, 1878 (only just received), is followed by one published in June, 1878, by A. Sanson, who thinks that Perez goes too far in qualifying the insufficiency of the observations of Dzierzon, and who has not given the most exact interpretation to his own (Perez) observations. The view that the honey bee is parthenogenetic is confirmed by the fact that a number of other insects are produced from unfertilized eggs; besides Mr. Sanson believes that the hybrids produced in Perez' hive were the result of the action of the law governing the reproduction of hybrids of all kinds, in the different branches of the animal and vegetable kingdoms, and which recognizes ancestral influences, atavism, the reversion to characters not existing in the immediate parents. In truth, the queen manifested the law of heredity which is observed in all hybrids. She had the external characters of the pure Italian, at least those of color; coupling with a brown male the eggs it laid gave birth to workers of varied characters such as exist in all hybrids. Sanson also criticises adversely the views of Gerard based on the observations of Perez. Gerard admits that in the hive examined by Perez, there were workers which laid eggs. Sanson doubts whether careful observations would have shown the co-existence in this hive of fertile queens and workers.—*Editors Naturalist.*

THE ANATOMY OF THE ANTHROPOID APES.—This subject has received some interesting contributions from the recent investiga-



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