

than the adults. A specimen without locality, but probably from Monterey, was in the collection of Mr. F. Button, now belonging to his son, F. L. Button.

HOW UNIONES EMIGRATE.

BY LORRAINE S. FRIERSON.

In the June number of NAUTILUS, 1891, is an article by Mr. C. T. Simpson, on "The Means of Distribution of Unionidæ in the South-eastern United States," in which he says that he had often found *U. obesus* Lea in dry places, where for nine months of the year they must have been in a dormant condition.

This Unio, which is no doubt a variety of *U. declivis*, *U. symmetricus*, etc., is one that can stand such changes. I have obtained them in places where they must have spent half of their lives in such a dormant condition. On the other hand, some Anodontas and *Margaritana confusagosa* Say are so intolerant of heat that they are frequently killed by the sun's rays while yet in water six inches deep. For the spread of these species of Unionidæ some other means than those which would suffice for *U. obesus* must be employed. Should it be shown that embryonic unios become encysted in fish, of course the problem would be solved in large part. There is, however, a method employed in nature which I have not seen mentioned, and which is to my mind a complete solution of the problem. Did any of my fellow Unio "cranks" ever catch Unio during the winter months by means of a long slender switch? You go to a bed of mussels in clear water, and standing on the shore you gently poke the end of your switch into the gaping shell of the unsuspecting unio. As soon as it feels the stick it closes the shell tightly on it; then you gently pull the mussel out and put it in your game bag.

Now suppose that this mollusk was an impregnated female, and that instead of a switch it was a wild duck's toe, which was accidentally caught between the valves. What would happen? Why, that the duck would fly out of the Black Warrior river in Alabama, and finally alight in Lake Kissimee, Florida, and by this time either the unio would let go or the duck's toe be cut off; and presto, a whole colony of unios is established. This is no fancy, but an observed fact, that is, so far as the transportation of unios is concerned.

Twice I have killed wild ducks with unios attached to their toes, and have seen what I believed to be unios hanging from the feet of others flying overhead. What has come under my individual observation twice must have happened thousands of times. How else could Unionidæ from the Mississippi drainage get into Florida?

U. declivis Pfr should have description; *H. lysimo* in the preceding issue, it had not I

1; Beaver, 6.
Pittsburgh, 20; Ohio
15.
20.
Raccoon Creek, 20;
6; Raccoon Creek,

FOENIA

General lines of darker
nucleus brownish,
suture distinct, ap-
spirally striate, the
two or three whorls
between the var-
face of the varices
unilate the margin
each a five rather
digitation of the
close-set erculate
depressions, ex-
digitations, ex-
in somewhat blunt
with a con-
closed,
smaller canal
length of shell 57,
ing varices, 35; width,

off Pt. Conception,
the Farralone islands,
repterus Desh., of the
apura Joual. Young
less digitate varices