D. vi.—14. A. 13. C+15+ P. 17. V. I. 5+5 I.

Color fuscus, membrana branchiostegali albo punctulata. Pinna analis albo marginata. Pinna pectoralis fascia albida transversa prope basem ornata.

Hab. in portu "Hong Kong" Chinæ. W. Stimpson!

V.—*Note on the Reproduction of Individuals of the Genus* Actinia.

By Arthur M. Edwards.

Read 20th September, 1858.

The important relations that the Actiniæ bear to other classes of animals, both above and below them in the scale of life, together with the beauty of their forms and tints, have invested them with an interest to zoologists which has also been shared by unscientific persons. The attention of naturalists has thus been drawn to the fact, that a thorough knowledge of their physiology and anatomy is much needed; and it is believed that any slight notes promoting that end will be gratefully accepted by students of this class of animals.

The writer intends in this short communication to give such facts relating to the reproduction of the Actiniæ, as have come under his own observation during the past year, while keeping specimens of the British species *A. mesembryanthemum*, and *A. tigrina*, for which he is indebted to Mr. M. S. de Vere of the University of Virginia.

The writer therefore selects the following from his notes, taken at the time of the occurrence of the facts mentioned; and here he would strongly impress on all observers the value of clear and extended notes and illustrative drawings, however crude, made at the time of any observation in Natural History.

Such a record becomes, after a time, extremely useful for purposes of reference.

"I have often noticed that my specimens of *A. mesembryanthemum* have, at times, accumulations of light pink-colored granules, of from 0.025 inch., up to almost 0.05 inch. diameter, in the interior of their tentacles, and that the creatures were at these periods in a more or less contracted state, that is to say, not swollen and semi-transparent as they usually are. I also noticed that, when in this state, they exhibited an extraordinary degree of inactivity, and would scarcely clutch at the food presented to them, which at other times they would seize and devour with great avidity. Their urtricating power also seemed to be deficient.

"Having again observed the presence of these granules in great quantity in the tentacles of one of my specimens, I watched them carefully for some time, and remarked the following facts:—

"The pink granules were seen to move up and down in the tentacles, sometimes reaching the extreme tip, and then retreating towards the body of the animal and disappearing; at other times turning at once down into the cavity, at the point where the base of the tentacle unites with the oval disc, but most frequently passing down to the other extremity near the mouth, and gradually disappearing. It at once struck me that these might be young, so I nipped one of the tentacles with a pair of forceps, when three of the granules were ejected from the orifice, situated at the extremity of the tentacle, through which the Actinia inhales the water by means of which it expands its body. The tentacle so seized was at once withdrawn, and remained contracted for some time. Two of the three granules, or, as Sir John Dalyell calls them, 'corpuscula,' dropped to the bottom of the tank, and were lost among the stones, but I captured one by means of a tube, and placed it under the microscope. It proved to be of a somewhat spherical form, and set with ciliæ on its surface, by means of which it moved about in a lively

manner. These ciliæ were found to be always present up to an advanced age in the Actinia, but do not seem to have been observed in the adult animal, and are therefore most likely wanting.

"I have also had an opportunity of verifying the observations of others, that the cavity of the Actinia, which is situated between the stomach and exterior wall of the body, is provided with ciliated epithelium, for on crushing a young specimen under the microscope, epithelial scales were seen to escape, which moved about for some time by means of their ciliæ.

"By the aid of the exterior ciliæ the young Actinia moves through the water, and indeed in the interior of the parent, always progressing with the base, or rather the point at which it afterwards makes its appearance, foremost. When very young, this swimming action is somewhat quick, but as the Actinia increases in dimensions the motion becomes slower, and at last the basal disc becomes apparent. Up to this time, and even sometimes after the base is formed, the creature often adheres to foreign objects by means of its tentacles, the urtricating capsules of which seem to be strongly developed.

"It is at this period of the appearance of the base, that the ciliæ, being no longer needed, most likely disappear. Food is not now required to be passed to the mouth, as the arms or tentacles appear, and the animal can search for and capture large prey,—though we often find full grown specimens, supporting themselves for months on the microscopic animals living in the water. The tentacles in *A. mesembryanthemum* make their appearance first as four, or sometimes more protuberances, and when these have reached maturity, others are added to them. The tentacles of the young animal are always longer in proportion than those of the adult.

"The normal mode in which the young Actiniæ are produced does not seem to be through the orifices at the extremities of the tentacles, or at least no one has seen them so brought forth. The natural mode is by the opening at the bottom of the stomach,

and so through the mouth, base foremost. The extreme muscular contraction consequent on seizing food will sometimes eject young from the mouth, which are also at times carried back, with the food, into the stomach, but not to be digested, as the Actiniæ are not cannibal in their habits. In my opinion, all Actiniæ are normally viviparous, though Mr. Lewes mentions what he considers an example of an oviparous specimen.

"On this point, as on many others relating to the Actiniæ, much remains to be discovered, and any one possessing a few living specimens should note down facts, be they already known or new."

Since writing the above, I have found that many of the facts mentioned have been already observed by Sir John Dalyell, but he did not follow up his observations so far as I have, and therefore while I confirm some of his, several of mine herein noted down, are now, for the first time, published.

VI.—*A Comparison of the Climate, &c., of New York and Kansas.*

By Professor O. W. Morris, New York.

Read 27th December, 1858.

Much has been said of late about the climate of Kansas, as to its similarity to that of southern New York, as well as to its salubrity; and as the *Army Meteorological Journal* afforded the facilities, a comparison was instituted between them, taking the station of Fort Leavenworth, on the Missouri river, in Kansas, and of Fort Columbus on Governor's Island, in New York Harbor, as the points. Fort Columbus is in north latitude 40° 42′,—Fort Leavenworth, in 39° 18′, one degree and twenty-four minutes farther south, and 20° 42′ west longitude from New York, and at an elevation of 873 feet above it.

The following Table shows the Mean temperature of each season, and for the year,—the Maximum and Minimum,—the prevailing Winds, and the quantity of Rain for each year, for a