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On a synthetic type of Annelid (*Anoploneis Herrmanni*) a commensal of *Balanoglossus*

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ova may be directly and closely surrounded by the zoosperms; the first phases of fecundation commence immediately.

The ova and spermatozooids can, without being placed in contact, preserve their vital properties in the water for several hours. Our best fecundations were obtained with elements which did not come together until two or three hours after their extraction from the genital glands.

We shall not describe the first phases of the development of the ova; but we think we must record a fact which, we believe, has not before been observed: the embryos of *O. angulata* begin to move from seven to twelve hours after fecundation, according to the temperature. At Verdon we obtained some in seven hours, the water having a temperature of 22°. Their mobility was exhibited in rotatory and gyratory movements. Sometimes they turn on the spot as on a pivot; at others they remove rapidly and shoot like a dart across the field of observation. The shell is formed at about the sixth or seventh day after the impregnation.

The artificial fecundation presents no difficulty of execution; it ends, four times out of five, in the formation of a mobile embryo, if the elements employed are good. With the Portuguese oyster the laying is effected gradually, and sometimes lasts several weeks. When a speck in the genital gland becomes transparent, it is because the elements are ripe; and it is then that they can be employed with advantage.

In consequence of the preceding, and seeing the fecundity of the oyster of the Tagus*, we tried some practical applications. For this purpose we prepared at Verdon a "clear" of 100 square metres surface, into which we poured the animated products of various artificial fecundations. The difficulty was to preserve the embryos while at the same time securing the renewal of the water. We attained that result by making the water enter and flow away through a bed of fine sand.

After a month of reiterated experiments our endeavours were crowned with success. We had the satisfaction of finding some brood fixed on each of the tiles placed in our experimental "clear." This is so much the more remarkable as, until last week, none had yet attached themselves to the numerous collectors immersed on the oyster-beds of the Gironde—that is to say in the very centre of the "clear."—*Comptes Rendus de l'Académie des Sciences*, July 31, 1882, t. xcv. pp. 256-259.

On a Synthetic Type of Annelid (Anoploneis Herrmanni) a Commensal of Balanoglossus. By M. A. GIARD.

The rich sandy beaches of the Iles Glénans, especially those of

* 1 cubic centim. of ovary contains	Ova.
By dissociation	2500000
By sections	5200000
Mean	3850000

The volume of the ovary of an oyster of average size varies between 6 and 8 cubic centim.

Ile du Loch and of the Ile St. Nicolas, contain two fine species of the genus *Balanoglossus*, which differ at the first glance in the breadth and colour of the branchio-genital region. One of them is of an orange-yellow in the male sex, of a greyish yellow in the female, and of a light brown in the immature animal; this the author names *Balanoglossus Robinii*. The other species, which is rather more slender and much narrower in the thoracic region, is of a salmon-colour, brighter in the female, more delicate in the male, and of a dull rose-colour in the asexual animal; the author calls this *B. salmoneus*.

These two forms appear to be allied to *B. aurantiacus*, found by Leidy at Atlantic City associated with *Solen ensis*, *Donax fossor*, and various Annelids of the genera *Clymene* and *Glycera*; and the *Balanoglossi* of the Iles Glénans live in the midst of a similar fauna. They are very abundant; and although it is difficult to obtain them entire from their great length (a metre and more) and extreme fragility, their position is easily discovered by the coils of sand of peculiar form which they throw up. They are to be reached at all times of the tide, especially *B. salmoneus*, which comes nearest to the shore.

The posterior extremity, which is nearest to the sand-coil, is the most easily extracted; it exactly resembles the intestine of a *Spatangus* filled with fine sand. The anterior extremity is obtained with more difficulty; it is folded several times upon itself, and covered with a mucus of very peculiar odour. The lateral margins of the thoracic region are raised dorsally to form a sort of tube, at the bottom of which, chiefly in *B. Robinii*, is found the parasite now to be noticed.

This Annelid would at once be referred to the Nereid group; but it presents more of the essential characters of the family Lycoridea. The body is cylindrical, slightly flattened, and feebly attenuated at the hinder part. The central region is traversed by a median furrow, which widens towards the cephalic extremity. The length of the animal is from 40 to 60 millim., its breadth (with the feet) from 5 to 9 millim. Its colour is a fine orange-yellow, tinged with fulvous on the feet.

The cephalic lobe is rectangular, twice as broad as long, and slightly emarginate in front. The tentacles are equal in length to the cephalic lobe, and *three in number*; the palpi, a little shorter than the tentacles, are inserted in two little lateral notches. There are four eyes, the two anterior larger and crescentiform.

The proboscis is entirely unarmed; the buccal aperture is quadrangular; the buccal segment differs but little from the succeeding ones; the tentacular cirri are of moderate size, placed at some distance from the lateral margins of the cephalic lobe, and probably six (in two groups of three) on each side.

The feet are all similar; the parapodia composed of two distinct and nearly equal rami. The upper ramus is furnished with a *single ligula* (the lower one) and armed with *simple capillary setæ*. The lower ramus is furnished with two bundles of setæ arranged on the

two sides of a hastiform process. These setæ are composite, falciform, heterogomphous. The terminal joint increases in size from the lowest to the highest. The dorsal cirrus is much longer than the ventral.

For this Annelid the author forms the genus *Anoploneireis*, and names the species *A. Herrmanni*, in honour of M. Herrmann, lately director of the laboratory at Concarneau, where these researches were made. The worm occurs about once upon ten *Balanoglossi*. There is no epitocous form; sexual maturity occurs in May. The males seemed to be rather more common than the females. The skin is delicate, and ruptures easily when the animal is immersed in absolute alcohol.

As to the place to be given to *Anoploneireis* among the Nereids, the author remarks that the presence of three antennæ, the form of the superior ramus of the parapodia, the existence of simple capillary setæ, and the absence of jaws are so many characters which separate this Annelid from all the other Lycoridea. The absence of the superior ligula of the superior ramus occurs also in *Ceratocephale* and *Dendroneireis*; but in these genera the setæ are all compound, and in the second the dorsal cirrus is pinnate. The form of the parapodia approximates *Anoploneireis* to the Hesionea, and especially to *Pordake*, and also to certain Syllidea, such as *Pionosyllis*, which also present simple setæ in the superior and compound falciform setæ in the inferior ramus of the parapodia. The presence of a third median antenna is also a Syllidian character met with in the Hesionea and *Polynoë*, but not in the Nereids.

The complete absence of buccal armature is remarkable in a Lycoridian. In *Ceratonereis*, indeed, there are no paragnatha at the basal part of the proboscis, and in *Leptonereis* and some allied types the paragnatha even disappear entirely; but the absolutely unarmed proboscis of *Anoploneireis* is unique in the group Lycoridea, and no doubt connected with its parasitic mode of life.

Thus *Anoploneireis* is a most curious type, uniting the Lycoridea on the one hand to the Hesionea and *Polynoë*, and on the other to the Syllidea; the last-named are to be regarded as the ancestors of the whole group of the Nereids (*sensu latiori*) as understood by Ehlers. —*Comptes Rendus*, August 21, 1882, p. 389.

Orthocynodon, an Animal related to the *Rhinoceros*, from the Bridger Eocene*. By WM. B. SCOTT and HENRY F. OSBORN.

Orthocynodon is the name given to designate a new genus of the rhinoceros line from the Bridger Beds of Wyoming. It was discovered by the Princeton expedition of 1878, in the Bad Lands of Bitter Creek. It carries the rhinoceros line farther back than it has been supposed to exist. The oldest representative of this line known is *Amynodon*; a genus found by Prof. Marsh† in the Uintah beds which overlie the Bridger. *Orthocynodon* was at first referred to the latter genus, until important differences in the molar dentition were discovered.

* Description from specimens in the E. M. Museum of Geology, Princeton, N. J.

† Am. Journ. Sci. ser. 3, vol. xiv. p. 251.