

others, and that this feature may persist even after the individual having it has passed in size or other characters the stage at which it is usually lost.

Thirdly. That the development of certain characters is present in an unequal degree in the corresponding parts of the same individual.

Finally, that certain features present in the younger individual and disappearing during subsequent growth are permanent features in some species of the genus *Paradoxides*.

To the biologist this species has a peculiar interest, as we appear to have the remains of an animal that was approaching extinction and gradually losing its vital force to such an extent that the young were unable to develop to the adult form except in a more or less imperfect degree, and, as a result, retained embryonic features although having the power to grow to the adult size. In only a comparative degree can we say that it is a case of reversion to the original forms of the genus or family to which it belongs, as we know so little of the progenitors of the *Paradoxides*. That certain characters of *Paradoxides* are present in the young of *Olenellus Gilberti* that are not present in the adult type of the genus, and that these characters are present in many but not in all adult specimens of *O. Gilberti*, we do know, and to that extent a reversion to the characters of its ancestry is shown in the period approaching the extinction of the species.

During the summer of 1885, the writer visited Pioche and the Highland Range, Nevada, and obtained a large collection of Cambrian fossils, among them several entire examples of *O. Gilberti*. One with a length of 25^{mm}, exclusive of the telson, which is quite as long as the body, shows most decided embryonic characters in the head, and the third segment of the thorax has a peculiar form to the pleural lobes and is prolonged to an extravagant length. The form of the third segment is not entirely normal, as it has been crowded forward and the pleural groove depressed. The pleuræ figured on pl. xix, figs. 2*h* and 2*i*, probably belonged to an individual like fig. 2 of pl. xxi.

Another specimen, 30^{mm} in length, exclusive of the telson, pl. xxi, fig. 1, is essentially a young specimen of *Olenellus Thompsoni*, differing less from that species than from the specimen mentioned above. The only reason I have for leaving *O. Gilberti* under a different specific name is the fact of its having such a peculiar and abnormal variation in different individuals.

If the two specimens represented by figs. 1 and 2 of plate xxi were submitted to a paleontologist he would be very apt to consider them not only as specifically distinct, but perhaps refer fig. 2 to a subgenus of fig. 1; and I acknowledge that, in asking the student to consider them as different phases of one species, I am requiring him to accept evidence which is only partially given in the illustrations of the species; but, if he has followed me in the preceding pages of description of *O. Gilberti*, he may understand why the head represented by fig. 1*f* of pl.