

corresponds with *Paradoxides*, where the *second* segment has a greater development than the others. In the extreme development of the posterior segments, in one species, there is likewise a similarity with *Paradoxides*. In the slight development of the pygidium, our fossil corresponds in some degree with *Paradoxides*."

To these differences may be added that the pleural groove on the segment of *Olenellus* is shallower, broader, and less oblique than that of *Paradoxides*.

The late Mr. G. Linnarsson considered *Olenellus Thompsoni* as having no affinity to *Olenus*, but as a true *Paradoxides* or *Anopolenus* (Brach. *Paradoxides* Beds of Sweden, p. 28. Bihang till k. Svensk. Vet.-Akad. Handl. Bd. 3, N:o 12, 1876).

With the first I am in accord, but, on comparing with *Anopolenus Salteri*, as illustrated by Mr. Hicks (Quart. Jour. Geol. Soc., vol. xxi, p. 481, fig. 1, 1865), I fail to recognize the characters uniting the two forms. The remarkable development of the posterior portions of *Anopolenus* and the peculiar glabella and eyes serve to distinguish it as a distinct genus from *Paradoxides* and *Olenellus*; and with *Paradoxides* there are the differences given by Professor Hall and the writer (ante); but, as stated by Mr. Ford, the adult form of *O. asaphoides* as known to him differs only in one feature from the structural peculiarities grouped under the genus *Paradoxides*, and that is the segment furrow or pleural groove. To this I think we may now add "and in the elongate, simple telson or pygidium."

One marked peculiarity is that the extended pleura of *Olenellus* occurs on the third, while that of *Paradoxides* is on the second, segment of the thorax.

#### RELATIONS OF THE GENERA PARADOXIDES, MESONACIS, AND OLENELLUS.

As mentioned under the description of the genus *Mesonacis*, that genus is regarded as intermediate between *Paradoxides* and *Olenellus*, or a form preserving typical features of each genus.

*Mesonacis* is distinguished from *Paradoxides* by the character of the pleural groove of the segment, the presence of a dorsal spine on a modified form of segment on the fifteenth segment of the thorax, and the drawing in of the eye, especially of the posterior end towards the glabella. The points of resemblance are the configuration of the head, the type of the segments (except in the pleural groove), and the form of the pygidium.

The features of the head and thorax of *Mesonacis*, back to the fifteenth segment, are in all details essentially those of *Olenellus*, but the pygidium belongs to a different form and the eleven posterior segments appear to go with the pygidium rather than with the anterior portion of the thorax.

The heads of young specimens of *Olenellus Gilberti* and those adults