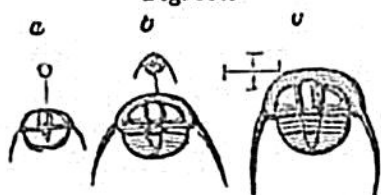


of strata of this age, if not entirely confined to them; but very numerous other genera accompany these. Burmeister, in his work on the organization of trilobites, supposes them to have swum at the surface of the water in the open sea and near coasts, feeding on smaller marine animals, and to have had the power of rolling themselves into a ball as a defence against injury. He was also of opinion that they underwent various transformations analogous to those of living crustaceans. M. Barrande, author of an admirable work on the Silurian rocks of Bohemia, confirms the doctrine of their metamorphosis, having traced more than twenty species through different stages of growth from the young state just after its escape from the egg to the adult form. He has followed some of them from a point in which they show no eyes, no joints to the body, and no distinct tail, up to the complete form with the full number of segments. This change is brought about before the animal has attained a tenth part of its full dimensions, and hence such minute and delicate specimens are rarely met with. Some of his figures of the metamorphoses of the common *Trinucleus* are copied in the annexed wood-cuts (figs. 597, 598).

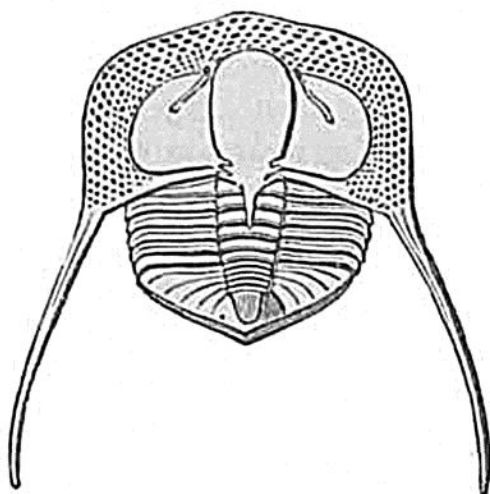
Fig. 597.



Young individuals of *Trinucleus concentricus* (*T. ornatus*, Barr.)

- a. Youngest state. Natural size and magnified; the body rings not at all developed.
- b. A little older. One thorax joint.
- c. Still more advanced. Three thorax joints. The fourth, fifth, and sixth segments are successively produced, probably each time the animal moulted its crust.

Fig. 598.



Trinucleus concentricus, Eaton.
Syn. *T. caractaci*, Murch.

N. Ireland; Wales; Shropshire; N. America;
Bohemia.

A still lower part of the Llandeilo or Bala rocks consists of a black carbonaceous slate of great thickness, frequently containing sulphate of alumina and sometimes, as in Dumfriesshire, beds of anthracite. It has been conjectured that this carbonaceous matter may be due in great measure to large quantities of imbedded animal remains, for the number of Graptolites included in these slates was certainly very great. I collected these same bodies in great numbers in Sweden and Norway in 1835-6, both in the higher and lower graptolitic shales of the Silurian system; and was informed by Dr. Beck of Copenhagen, that they were fossil zoophytes related to the *Virgularia* and *Pennatula*, genera of which the living species now inhabit mud and slimy sediment. The most eminent naturalists still hold to this opinion.