

mirus (fig. 586) is almost a globe when rolled up, the forehead of this species being extremely inflated. The *Homalonotus*, a form of Trilobite in which the tripartite division of the dorsal crust is almost lost (see fig. 587), is very characteristic of this division of the Silurian series.

2. *The Wenlock Shale.*—This, observes Sir R. Murchison,* is infinitely the largest and most persistent member of the Wenlock formation, for the limestone often thins out and disappears. The shale, like the Lower Ludlow, often contains elliptical concretions of impure earthy limestone. In the Malvern district it is a mass of finely levigated argillaceous matter, attaining, according to Prof. Phillips, a thickness of 640 feet, but it is sometimes more than 1000 feet thick in Wales. The prevailing fossils, besides corals and trilobites, and some crinoids, are several small species of *Orthis*, with other brachiopods and certain thin-shelled species of *Orthoceratites*. One species of *Graptolite*, a group of zoophytes before alluded to as being confined to Silurian rocks, is very abundant in this shale, and occurs more sparingly in "the Ludlow." Of these fossils, which are more characteristic of the Lower Silurian, I shall again speak in the sequel (p. 442).

Fig. 587.



Homalonotus delphinocephalus, Konig. Dudley Castle; $\frac{1}{3}$ nat. size.

Fig. 588.



Graptolithus Ludensis, Murchison. Ludlow and Wenlock Shales.

MIDDLE SILURIAN ROCKS.

Caradoc Sandstone.—This sandstone, so named from a mountain called Caer Caradoc, in Shropshire, was originally considered by Sir Roderick Murchison as the sandy and upper portion of the Lower Silurian strata. Subsequent investigations have led to the conclusion that the original or typical Caradoc is divisible into two formations,—the lower, an arenaceous form of Llandeilo flags, and containing identical species of fossils; the other or superior sandstone, a series of strata resting unconformably on the Llandeilo beds, and chiefly characterized by Upper Silurian fossils, yet having some intermixture of species common to the "Lower Silurian." Hence the Caradoc, as distinct from the Llandeilo, must either be classed as the base of the Wenlock Shale, an opinion to which some authorities incline,—or it may be regarded as a Middle Silurian group, an alternative which I have embraced provisionally in common with many officers of our Government Survey. The larger part, therefore, of what was once termed "the Caradoc" has merged into the Llandeilo, and is the equivalent of the upper and middle portions of that division.

The first step towards placing in a clearer light the relations of "the Caradoc" to the strata above and below it, was made in 1848 by Professor

* Siluria, p. 111.