

which gradually exclude the Dioplograptidæ, until before the higher parts of the system are reached they are the sole representatives of the graptolites. Four graptolitic zones have been recognized in the Llandovery group, viz. in ascending order: (1) *Diplograptus acuminatus*, (2) *Dioplograptus vesiculosus*, (3) *Monograptus gregarius*, (4) *Monograptus spinigerus*. Besides these species, *Monograptus tenuis*, *M. attenuatus*, *M. Hisingeri*, *M. lobiferus*, and *Rastritus peregrinus* are common Llandovery forms. Other characteristic fossils are *Orthis elegantula*, *Stricklandinia* (*Pentamerus*) *lens*, *Meristella crassa*, and *Calymene Blumenbachii*. From the abundance of the peculiar brachiopods termed *Pentamerus* in the Lower, but still more in the Upper Llandovery rocks, these strata were formerly grouped together under the name of "Pentamerus beds." Though the same species are found in both divisions *Pentamerus oblongus* is chiefly characteristic of the upper group and comparatively infrequent in the lower, while *Stricklandinia* (*Pentamerus*) *lens* abounds in the lower, but appears more sparingly in the upper. The genus ascends into the Wenlock and Ludlow groups, and is specially distinctive of Upper Silurian rocks.

(b) *Upper Llandovery and May Hill Sandstone*.—This sub-group has received the name of May Hill Sandstone from the locality in Gloucestershire where, as first shown by Murchison, it is well displayed. Sedgwick pointed out that it forms over a wide region the natural base to the Upper Silurian series, for it rests unconformably on all older rocks. It consists of gray, yellow and brown ferruginous sandstones and conglomerates, sometimes calcareous from the abundance of shells, which are apt to weather out and leave casts. Where the organisms have been most crowded together, the rock even passes into a limestone (*Pentamerus* limestone, Norbury limestone, Hollies limestone). The lower members are usually strongly conglomeratic, the pebbles being derived, sometimes in great part, from Lower Silurian rocks. Appearing on the coast of Pembrokeshire at Marlos Bay, this sub-group ranges across South Wales until it is overlapped by the Old Red Sandstone. It emerges again in Carmarthenshire, and trends northeastward as a narrow strip at the base of the Upper Silurian series, from a few feet to 1000 feet or more in thickness, as far as the Longmynd, where, as a marked conglomerate wrapping round that ancient Cambrian ridge, it disappears. In the course of this long tract it passes successively and uncon-