

analogy with the Oriskany in the large number of species of *Platyceras*, *Spirifer*, and *Strophomenids*. (J. M. Clarke, on the Hercynian Question, 42d Rep., *Rep. N. Y. State Mus.*, 1889.)

All writers have made the *Limuloids* of the Middle and Upper part of the era good evidence of equivalency. But there are large species in the Lower Silurian; and, moreover, they may have lived in brackish or fresh waters, as some facts render probable, so that they really have very little chronological value.

According to Barrande, the following are characteristic species of his subdivisions, E, F, G, H, of the Upper Silurian of the Bohemian basin:—

E. Graptolitic slates, passing above into limestone, corresponding to the Niagara period. Many *Graptolites*: *Halysites catenulatus*, *Leptaena rhomboidalis*, *Atrypa* (*Dayia*) *navicula*, *Pentamerus Knightii*, *Rhynchonella*, *Spirifer*, *Orthis*. Many species of *Orthoceras*, and others of *Cyrtoceras*, *Gomphoceras*, *Trochoceras*, etc.; *Calymene*, *Phacops*, *Lichas*, *Cyphaspis*, *Illænus*, *Cheirurus*, *Acidaspis*, *Proetus*.

F. A dark limestone, cherty above: *Favosites Gothlandicus*, *F. fibrosus*; *Orthis palliata*, *Atrypa reticularis*, *A. comata*, *Pentamerus galeatus*, *Rhynchonella*, *Spirifer*, *Leptaena Verneuili*; *Phacops*, *Lichas*, *Bronteus*; *Tentaculites*, *Goniatites*.

G. A cherty or impure limestone, with an intermediate shaly layer: *Atrypa reticularis*, *Pentamerus*; *Tentaculites ornatus*; *Lituities*, *Goniatites*, *Orthoceras Midas*; *Phacops fecunda*, *Dalmanites Hausmanni*, *Bronteus*, *Cheirurus Sternbergi*, *Proetus*, *Harpes*.

H. Shale and sandstone: *Leptaena*, *Orthoceras*, *Lituities*, *Goniatites*, *Phacops fecunda*, *Proetus*, *Tentaculites*.

In Russia, on the Baltic, south of the Gulf of Finland, the four subdivisions, G, H, I, K, have afforded the following species: G. *Rhynchonella affinis*, *Strophomena pecten*, *Orthis Davidsoni*, *Pentamerus borealis*, *Leperditia Keyserlingi*, *Phacops elegans*. H. Dolomytes and Coral limestone: *Syringopora bifurcata*, *Favosites Gothlandicus*, *Halysites*, *Pentamerus oblongus*. I. The Lower Oesel Zone, dolomytes = Wenlock: *Euomphalus funatus*, *Orthoceras annulatum*, *Spirifer crispus*, *Orthis elegantula*, *Leptaena transversalis*. K. The Upper Oesel Zone, limestones: *Pterinea retroflexa*, *Chonetes striatellus*, *Spirifer elevatus*, *Beyrichia tuberculata*.

In New South Wales occur *Favosites Gothlandicus*, *Heliolites interstinctus*, *Calymene Blumenbachii*, *Encrinurus punctatus*, *Phacops caudata*, *Atrypa reticularis*, *Strophomena pecten*, *Pentamerus Knightii*, *P. oblongus*, *Meristella tumida*, *Orthoceras ibex*.

#### *American Upper Silurian Species Occurring Elsewhere.*

*Halysites catenulatus*, Niagara, Great Britain (Llandeilo, Wenlock, Aymestry), Norway, Sweden, Russia, Eifel.

*Heliolites pyriformis*, Niagara, Great Britain (Wenlock, Ludlow), France, Sweden, Russia, Eifel.

*Favosites Gothlandicus*, Bohemia.

*Eucalyptocrinus decorus*, Niagara, Great Britain (Wenlock), Scandinavia.

*Orthis elegantula*, Clinton, Niagara, Great Britain (Wenlock, Ludlow), Gothland.

*Orthis hybrida*, Niagara, Great Britain, Gothland.

*Orthis biloba*, Niagara, Great Britain (Wenlock), Gothland.

*Plectambonites transversalis*, *Anticosti*, Great Britain (Wenlock), Gothland.

*Leptaena rhomboidalis*, Trenton, through Upper Silurian, into Devonian, Great Britain (Wenlock, Ludlow), Sweden, Russia, Belgium, Eifel, France, Spain.

*Strophomena rugosa*, Niagara, Helderberg, Great Britain (Wenlock, Ludlow), Gothland, Russia, Eifel.

*Spirifer crispus*, Niagara, Great Britain (Llandeilo, Wenlock), Gothland.

*Atrypa reticularis*, Clinton, Niagara, Helderberg, Great Britain (Wenlock, Ludlow), Gothland, Bohemia, Russia (Urals, Altai).