

tites, lamellibranchs and gastropods appeared in great numbers and in species characteristic of the later Naples fauna. Dr Clarke has for this reason designated the fauna of the Genundewah limestone as a pre-nuncial fauna.<sup>1</sup> Among the most interesting members of this fauna are the following:

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| <i>Dinichthys newberryi Clarke</i>                      | <i>Bellerophon koeneni Clarke</i>          |
| <i>Spathiocaris emersoni Clarke</i>                     | <i>B. denckmanni Clarke</i>                |
| <i>Tentaculites gracilistriatus Hall</i>                | <i>Macrochilina pygmaea Clarke</i>         |
| <i>Protospiralis minutissima Clarke</i>                 | <i>M. seneca Clarke</i>                    |
| <i>Manticoceras pattersoni var. styliophilum Clarke</i> | <i>Lunulicardium hemicardioides Clarke</i> |
| <i>M. contractum Clarke</i>                             | <i>L. encrinurum Clarke</i>                |
| <i>M. fasciculatum Clarke</i>                           | <i>Honeoyea styliophila Clarke</i>         |
| <i>M. nodiferum Clarke</i>                              | <i>Pterochaenia fragilis Hall</i>          |
| <i>Gephyroceras genundewa Clarke</i>                    | <i>P. sinuosa Clarke</i>                   |
| <i>Tornoceras uniangulare (Conrad)</i>                  | <i>Buchiola? livoniae Clarke</i>           |
| <i>Loxonema noe Clarke</i>                              | <i>B. scabrosa Clarke</i>                  |
| <i>Pleurotomaria genundewa Clarke</i>                   | <i>Paracardium doris Hall</i>              |
| <i>Protocalyptraea styliophila Clarke</i>               | <i>P. delicatulum Clarke</i>               |
| <i>Phragmostoma natator Hall</i>                        | <i>Melocrinus clarkii (Hall) Williams</i>  |
| <i>P. incisum Clarke</i>                                | <i>Aulopora annectens Clarke</i>           |

#### *West river shale*

Professor Hall separated the Genesee slate in order to indicate its bituminous character by a distinct name. Subsequently the formation here described as West River shale was incorporated into the Genesee shale as upper Genesee shale, but the different lithologic characters of the two, the absence of the bituminous character in the upper shales and the intercalation of a distinct limestone between the two have demonstrated the necessity of subdivision and of separate designations. The term West River shale has been proposed for these lighter shales, overlying the Genundewah limestone [see N. Y. State Mus. Bul. 63. 1904. p. 59].

This formation consists mainly of fine dark gray or bluish black shales, thinly laminated and highly fissile. They are slightly calcareous and become lighter colored on exposure. Layers of bituminous black shale and thin limestone occur in the lower part. Concretions and the septaria known as "turtle stones" are common in these beds farther east and also thin sandy flags occur, though rarely.

The West River shale is 12 feet thick, where exposed on the south branch of Smoke's creek above the upper railroad bridge at Windom.

<sup>1</sup>State Geol. An. Rep't 1896. 1899. p. 38; N. Y. State Mus. Mem. 6. 1904. p. 203.