

The report of Vanuxem, published in the same year (1842), took the same general standpoint as that of Emmons, but Vanuxem extended the name of New York system so as to include the Old Red Sandstone. Mather (1843) in his official report protested against the independence of the Taconic system, contending that it was a strongly metamorphosed representative of the Champlain group. In this view, Mather was supported by Hitchcock, Rogers, Dana, and J. Hall.¹ The report by Hall (1843) gave an admirable exposition of the three upper divisions of the New York system. The subordinate groups proposed by Vanuxem and Conrad were for the most part accepted, and a few additional groups were introduced, so that the New York system (exclusive of the Old Red) was now sub-divided into twenty-nine groups.

Hall made a comparison between the palæontological sequence in these groups and the sequence that had been worked out by Murchison and Sedgwick. For the five lower groups (from the Potsdam sandstone to the Trenton limestone) Hall could adduce no British equivalent; the Utica slates were compared with the Llandeilo slates (Lower Silurian) of Murchison; the groups from the Hudson river beds and the Clinton group were said to be equivalent with the Caradoc or Bala shales and flagstones; the groups from the Niagara beds to the Corniferous-Limestone group were compared with the Wenlock shales and limestones; and the strata from the Marcellus and Hamilton groups to the Chemung group were regarded as the equivalent both of the uppermost or Ludlow division of the Silurian system and of the Devonian system. Each of Hall's groups is very accurately characterised according to stratigraphical, lithological, and palæontological features. And as the strata in the area examined by Vanuxem and Hall follow almost everywhere in horizontal or gently inclined position without any appreciable tectonic disturbances, the sub-divisions erected by these geologists have undergone little subsequent modification. Some time later, Hall described in a series of handsomely-illustrated volumes the Palæozoic

¹ James Hall, born on the 12th September 1811, at Hingham in Massachusetts, received his scientific education at the Polytechnic School of Troy; in 1836, entered the Geological Survey Department of New York State, and was afterwards Director of the Natural History Museum in Albany. He died in his eighty-seventh year (1898) in Albany.