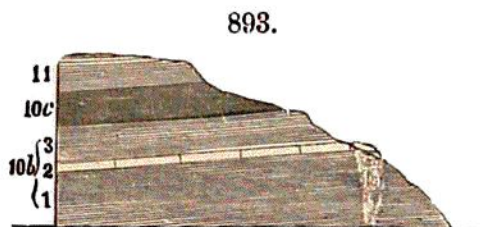


ing to J. M. Clarke, (1) Marcellus shale, 100'; (2) a thin stratum of limestone of coral-reef character, at the base of the Hamilton beds; (3) the lower shales of the Hamilton, 140'; (4) the Encrinal Band; (5) the Upper shales, 250'. In Chautauqua County, a boring gave



Section of Hamilton beds, Lake Erie. Hall.

50' Marcellus shale and 395' Hamilton (G. D. Harris, 1891). To the eastward, the beds are coarser and more arenaceous. The Tully limestone thins out in the eastern part of Ontario County, and is the most southern limestone in New York State. It is quarried and burnt for lime in the village of Tully, Onondaga County, where it is 12' thick.

The flagging-stone of the Hamilton is quarried near Kingston, Saugerties, Coxsackie, and elsewhere on the Hudson. In Perry County, central Pennsylvania, the Marcellus is 200' thick, and the Hamilton, 900' or more; they consist of shales and sandstones, and include the Montebello sandstone. At the Falls of the Ohio, the Hamilton is represented by a magnesian limestone, more or less shaly. On the west side of the Mississippi River, in Iowa, outcrops south of Davenport consist of about 50' of shale with some crinoidal limestone. In Missouri, Swallow reported the occurrence of Hamilton shales, 45' thick, near Ashley, in Pike County.

In eastern Pennsylvania, Monroe County, where the thickness of the beds of the Hamilton period is 1750' to 5000', that of the Marcellus shale is 200' to 800' or more. The shale is black to gray in color, and the darker kinds are very carbonaceous, or even coaly at times. Tully limestone is absent. The high cliffs on the Delaware, in Pike County, from Port Jervis southward, are Hamilton. North-northwest of Monroe County, in Columbia County, Penn., the whole thickness is 2200' to 2500'; but farther south, near the south border of Northumberland County, Penn., a highly disturbed region, the total thickness, for some reason, is stated to be only 600'. Prosser made a section across Monroe County, along the D., L. and Western R.R., and found the Marcellus shale 800' thick, and the Hamilton overlying it, 1400', the latter being proved by the fossils to include the Hamilton, Tully, and Genesee beds of I. C. White's Report.

In the *Eastern-border* region, at Gaspé, the 6000' of sandstones, above the 1100' referred to the Corniferous period, are believed to be for the most part of Hamilton age. St. John, in New Brunswick, is a noted locality of fossil plants of this era. In that region there are (1) below, of the *Middle Devonian* series, the Dadoxylon sandstone resting on the Bloomsbury conglomerate, and overlaid by the Cordaites shales; (2) above the Mispéc conglomerate and slate; and (3), of the Upper Devonian, the Perry sandstones, with remains of plants. (Dawson.)

The Devonian is well developed in the Mackenzie River district, British America, and southward in the vicinity of lakes Manitoba and Winnipegosis. In the Mackenzie River district the section shows (1) at the base 200' of grayish limestone, interstratified with dolomytes, the lower part of which may be older than the Devonian; above this, (2) about 500' of greenish and bluish shales alternating with limestones, followed by (3) about 300' of limestones. (McConnell.)

Whiteaves has described a rich fauna, mainly from the upper part of the second division. Among the species, 22 are also found in the Hamilton formation of Ontario and New York; 10 are also found in Iowa, there referred to Chemung; and 7 are regarded as characteristic Chemung fossils in New York and Pennsylvania; 29 of the species are either identical (19), or closely allied with European Devonian species. Mr. Whiteaves considers the fauna to belong to the "Cuboides zone" of Europe, of which the Tully limestone of New York is by Williams regarded as an equivalent.

The Manitoba section consists of (1) a few feet of red shales resting upon Silurian rocks, followed by (2) 200' of dolomytes, and then by (3) 50'-75' of calcareous shales, above which are (4) the fossiliferous limestones containing the "Cuboides fauna." The