

at Rock Island, etc.; Wisconsin, north of Milwaukee; in Iowa, near Independence; on the Mississippi, shale (*Marcellus*) overlaid by limestone; and in Missouri. The greatest thickness is along the Appalachian region, where the beds are almost wholly fragmental; and within these limits in Monroe County, eastern Pennsylvania, the group is 2000 to 5000 feet thick.

The Hamilton group of New York has as its lower member, the *Marcellus shale*, a formation of soft, black shale, except near the bottom, where occurs a thin limestone stratum called the *Goniatite limestone*. The shale is bituminous, and much unavailing search for coal has hence been made in it. Hall states that in many places it contains so much bitumen as to give out flame when thrown into a fire of hot coals. Its fossils are few in species, and mostly small, excepting the *Goniatites*.

Above the *Marcellus* come the true *Hamilton beds* — chiefly shaly sandstones with some fine shales and thin limestone layers; and at top, in many places, the *Tully limestone*, 10 to 20 feet thick, which is, by some, made the base of the Upper Devonian. This limestone is sometimes referred to as the *Cuboides zone*, in reference to a common fossil, *Rhynchonella cuboides*.

In eastern New York, in Ulster, Green and Albany counties, the Hamilton affords "the North River flagstone," affording excellent flags and pavements, used much in New York and the adjoining states. The thicker layers are called *bluestone*, from the bluish gray color. The bluestone is easily worked by machine-planing for use in the trimmings of buildings, and is convenient for the purpose if the stone can be selected that will not drip iron stains down the front below a course of it. The flagstone contains an occasional, slender worm-boring, and coaly fragments, and is often ripple-marked, like other layers of the Hamilton. Moreover, the strata are frequently intersected by joints of great extent and regularity. The scene in Fig. 121, page 112, is from the Hamilton near Cayuga Lake.

In eastern Canada, at Gaspé and Baie des Chaleurs, a middle portion of the 7036 feet of Devonian sandstones is referred to the Hamilton or Middle Devonian; and the next above to the Upper Devonian. The Little River group of Nova Scotia, and Cordaites shales and flags of St. John County, New Brunswick, are referred to the Hamilton by Dawson.

West of the Mississippi, in the Eureka district, Nevada, the 8000 feet of Devonian limestone and shale include the Hamilton group; but it has not been found possible to separate the Hamilton portion. Hamilton beds are also found in the valley of the Mackenzie River, between Clear Water River and the Arctic Ocean, some of the species of fossils being identical with those of the United States and Canada (Meek).

*Interior Continental Region.* — The Hamilton beds of New York are separated into two parts by a thin layer of *Encrinal* limestone. The annexed section (by Hall) is from the borders of Lake Erie. The Hamilton beds, 10 *b*, include (1) blue shale, (2) *Encrinal* limestone, (3) Upper or *Moscow* shale; the *Tully limestone* is wanting. Above lie (10 *c*) the *Genesee slate*, and (11) a following part of the *Portage group*, both of the Upper Devonian. A section near Canandaigua Lake, in Ontario County, N. Y., includes, accord-