

*ee*, another on the east; S, Saltonstall Ridge, called Pond Ridge by Percival; T T, Totoket Ridge; C, Mount Carmel; M, Meriden; Mt, Middletown; Pd, Portland and Portland sandstone quarries; H, Hartford. The scale of the map is  $\frac{1}{10}$  of an inch to 5 miles. The many interruptions in the lines of trap on Percival's map are generally due to intervals of sandstone, and the smaller of them may often have resulted from falls of the sandstone walls of oblique fissures, as explained on page 298. But in some cases they are breaks in the outcrop of trap in which no sandstone was in view, and where further investigation may prove the line to be continuous. One such case exists in the termination of West Rock, and another in the south side of the summit of Mount Carmel; and changes have been made correspondingly in Percival's map. One other change made, in order to represent the results of later observation, is the continuation of the dike *bb* to and across West Rock.

Some of the general facts of importance illustrated on the map are the following:—

1. The outcrops are most numerous in this southern portion of the area. To the north of the region here mapped, there are only continuations of the three western lines to Mount Tom and Mount Holyoke in Massachusetts, and an isolated line farther north which passes near Greenfield.

2. The outcrops of trap are not wholly confined to the Triassic area. Two lines of dikes exist on the west side (*pp*, *bb*, on the map); they continue southwestward to the Sound. In one of them, the trap is sparsely porphyritic with crystals of anorthite. There are also two long dikes on the east: one, commencing in *ee*, to the eastward of New Haven, not a mile distant from the area, has a course nearly parallel to its eastern outline for 10 miles, but afterward diverges from it; the other commencing nearly east of Hartford, just outside of the area, is parallel to the area for the same distance. Both were traced by Percival to the Massachusetts line.

The convergence of the dike *ee*, southwestward toward New Haven Bay, and that of the other lines of trap in the Triassic area, are part of the evidence that the estuary or trough terminated at this place.

3. The trap (doleryte or diabase) is essentially the same rock in all the belts, and through all the Triassic areas. It is sparingly chrysolitic, according to Iddings, in Orange, N. J., and rarely so in other places. The chief variation is a result of alteration by means of water imbibed as vapor, when, it is believed, the rock was on its way through the sandstone to the surface. The rocks are sometimes unaltered on one side of a belt, and much altered along its middle or on the other side. Dikes intersecting the outside crystalline rocks are wholly free from the alteration, showing that the moisture was not from the same source as the trap, but more superficial. The altered hydrated trap has little luster; is often amygdaloidal within 50 feet or so of the surface; and decomposes rapidly, and often to a depth of several yards, so that a small dike between layers of sandstone is sometimes found wholly changed to a brownish yellow earth, and looks like a bed of tufa. For remarks on amygdaloids, see pages 78, 336. Along some of the fissures there were carried up with the trap ores of copper, and thus copper veins were made in the trap and in the sandstone of the vicinity (page 338).