

over the region west of the ridge. It follows therefore that the eruptive work began before the close of the period of the sandstone formation.

But it appears to be also true that it characterized the closing part of the period. The facts from West Rock, and others of similar import from East Haven, where the trap rests on upturned sandstone, are evidence that so far as these regions are concerned, the upturning preceded the eruptions. This conclusion involves the Saltonstall region; and if this, so also the Totoket Ridge and others to the north, since all are closely alike, and in close conjunction. Moreover, a laccolithic origin may be inferred not only for East and West Rock, but for all such cases.

With regard to the Mount Tom Ridge, direct evidence of age of eruption is wanting; for no east-and-west sections have been reported. But a laccolithic origin and the abrasion of the underlying sandstone are indicated by the occurrence of breccia beneath the trap, and especially by the limestone chips in the lower part of the mass of the trap, and also over its upper surface, as described by Emerson. A bed of limestone was evidently divided by the advancing tongue of melted trap, part being left below, and the rest above. As Emerson observes, the facts prove that the heavy trap flowed over the sandstone, abrading and tearing it. But they prove also that the flow was not surficial, but laccolithic; for in the case of an advancing surficial stream the lava, being retarded by friction at bottom, has a downward flow at the front, and hence could not bear to its upper surface material met with along its track.

A laccolithic origin for the Mount Tom Ridge explains also the existence of the *attendant* dike parallel with its southern, western, or eastern side, and for similar cases elsewhere. For whenever, in the forced flow of lava from the supply fissure to make the laccolith, the force could not so easily contribute to the laccolithic mass (owing to the weight it had acquired by accumulation and that of the overlying sandstone, and to resistance from other sources) as make a fracture either side for a new place of escape, the latter event would take place. A dike of five inches, which is visible under the trap mass in the south front of West Rock, and which is both amygdaloidal and chrysolitic, is probably an example of this mode of origin.

This evidence of a laccolithic origin brings the north-and-south trap belts into the same category, as to method and time of origin, with West Rock and East Rock. After or during the upturning of the sandstone appears, therefore, to be the time of origin of the larger part of the eruptions.

The hypothesis has been brought forward by W. M. Davis (*U. S. G. S. Rep.*, vol. vii., and elsewhere), that the larger part of the trap was erupted in the early part of the Triassic period long before the upturning; that in the case of the Connecticut valley area, the trap was poured out *surficially* from fissures along the eastern margin of the area, and thence flowed westward across it over the underlying sandstone; that after more sandstone had been deposited a second and larger surficial flow took place; then after more deposition of sand-beds a third smaller flow; and that this interstratified sandstone and trap were covered by other horizontal deposits of sandstone of great thickness; that,