

formed in Precambrian times, the case for the age of the faults would be made out, but this has not yet been successfully done.

Kemp has described three diabase dikes cutting the ore body in the Hammondville iron mines, which he says fault the ore, raising it about 15 feet in each case.<sup>1</sup> The dikes appear not to be faulted. If this be true, the faulting could hardly have been later than the time of dike extrusion. A later fault might, it is true, have paralleled the dike, but that this was the case ought to be readily made out in the exposure. This would seem therefore to be a veritable instance of Precambrian faulting.

The older Precambrian dikes of the region, more specially the granite and pegmatite veins, are not infrequently found faulted repeatedly and in small amounts, as the diabase dikes are [pl. 11]. Precise evidence of the date of faulting is equally lacking here.

On the whole then it is to be said that, while demonstrative evidence of Precambrian faulting to any special extent has not been forthcoming, it is nevertheless quite probable that such was the case, the faulting having occurred in rather late Precambrian time, when, owing to the long continued surface erosion, the originally deeply buried rocks had been transferred from the deeper zone of flow to the superficial zone of fracture.

**Paleozoic faults.** As such may be classed in all probability all faults found in the Paleozoic rocks and many of those in the Precambrian. Faulting may well have been initiated in the region at the time of the uplift which terminated Lower Silurian deposition, and which was most marked on the east, being there accompanied by some considerable disturbance of the rocks. The great earth disturbances which prevailed in the Appalachian zone toward the close of the Paleozoic would seem more likely to have brought about the major faulting of the region. To the east and south of the district there was a time of disturbance, resulting in prolific faulting, in the Mesozoic; but, if the region in question was also affected, the results can not be discriminated from those produced in the Paleozoic. However, the Champlain and Mohawk faults are of a different type from those which abound in the Newark Mesozoic of New England and the Middle Atlantic states, which is evidence against their being classed together.

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<sup>1</sup>U. S. Geol. Sur. Bul. 107, p.40.