

occurs partly in veins, but chiefly disseminated in scales and laminæ in the limestones and as independent layers. Sir J. W. Dawson estimates the aggregate thickness of it in one band of limestone in the Ottawa district as not less than from 20 to 30 feet, and he thinks it is hardly an exaggeration to say that there is as much carbon in the "Laurentian" as in equivalent areas of the Carboniferous system. He compares some of the pure bands of graphite to beds of coal, and maintains that no other source for their origin can be imagined than the decomposition of carbon-dioxide by living plants.<sup>20</sup>

An important and interesting feature of the pre-Cambrian rocks is the occurrence among them of abundant proofs of extensive and long-continued volcanic action. Sheets of lava having an aggregate thickness of many thousand feet are interstratified with coarse and thick volcanic conglomerates and tuffs. The eruptive rocks include both basic and acid varieties, for among them are found diabases, melaphyres (often highly amygdaloidal), porphyrite, gabbro, quartzless and quartziferous porphyry, rhyolitic felsite, augite-syenite, and granite. Some further details regarding these masses will be given in subsequent pages. In the Lake Superior region the amygdaloidal diabases and the conglomerates are largely impregnated with native copper.

While in some regions the original characters of pre-Cambrian rocks, sedimentary and eruptive, are as easily determinable as those of any ordinary Palæozoic series, in others they have been more or less effaced by subsequent

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<sup>20</sup> But compare the advocacy of an opposite opinion by Whitney and Wadsworth, "Azoic System," p. 539.