

At the northern margin of the Animikie rocks, especially in their lowest member, the chert and jasper, are found scattered over a considerable area thin horizontal layers of a very pure high-grade magnetite. These finds are remnants of ores which were once interstratified between the lowest bands of the chert, and escaped erosion and glacial action. They are seldom of great extent horizontally, or thickness vertically, resting either on the granites, gneisses or a rock of the Huronian series. On Map 2, I give an example how they occur. Now let us try to find out how this iron got into or between these chert and jasper beds, and what caused them to become magnetic. The deposition of the chert and jasper was produced by hot mineral springs, doubtless of considerable volume and of widespread extent, carrying silicate acid and some carbonate of iron in solution. These two substances were precipitated and later solidified together, that is, they not only mixed mechanically together, but also the iron seems to have partly separated from the silica and formed little "pools" of its own.

Now, it might be said that this iron had been an oxydation product of the chert, that is, that oxygen changed the carbonate of iron of the chert into ferric oxide and the latter replaced the silica, and formed these iron layers. I doubt this as far as all these latter are concerned. If that theory would be correct in every instance, we should be able to trace this replacement from one object to another, from chert to iron, but I was unable to detect this at such places where it would have been best observable, where later oxydation and cementation processes were highly unfavorable, as for instance at the "Wigwams," three isolated cones standing high and dry overlooking the country for miles. We see here, on the precipitous rock exposures, the cherts resting on the granite to a thickness of 20 feet and more and interstratified with the magnetite; both are overlaid by a varying thickness of trap, sometimes up to over 100 feet. But the teeth of time are gnawing also on this hard material and we see iron and chert falling out of their resting-places and covering sparingly the foot of the hills. Each of them, sharply separated from the other, they do not show a trace of partial pseudomorphism, from which we could conclude whether it originated from chert or not. I will not say that there are not a few places where the magnetite seems