

aggregated in "veins," in "lodes," in "segregations;" and thus the huge lenticular masses of hæmatite may have been formed.

Perhaps this theory is sustained by the relations of iron ores to the stratification. Often all stratification is obscure or wanting; often the stratification of the country rock can be traced through the ore-body; not unfrequently the ore-mass is a vast stratified formation. Pilot Knob, in Missouri, is a great iron-schist—a schistose formation in which the once disseminated iron particles appear to have been driven by some agency, into a particular part of the formation. In this case, the richest part of the formation is at the pinnacle of the knob, and the schist decreases in richness as we descend to the base.

Now, there are two suggestions in reference to the way in which iron ore particles have been accumulated—first, fossilization of ancient iron-bogs; second, segregation. If the great masses found in metamorphic strata seem rather to be the results of segregation, some of the younger iron deposits appear to be of the nature of fossilized swamps. Probably, too, some rich stratified ores, like those back of Milwaukee, and those near Rochester, New York, were precipitated in shallow seas—the iron brought in by springs. This is a third suggestion.

There is still another way in which iron combinations appear to accumulate. It is a modification of the segregation process. You have seen, sometimes, in a yellowish or reddish sandstone—that is, a ferruginous sandstone—some concentric bands of a deeper color—bands formed by an increased amount of oxide of iron. Now observe that the lines of stratification of the rock pass quite through these spheroidal forms. It is manifest, therefore, that the spheroidal aggregations took place after the sediments were laid down—after the rock was formed. If so, then the iron material must have moved through the consolidated rock. How did it move? Could solid particles of iron-oxide travel from all directions toward a common center, and all halt at a common distance from that center? Evidently not, only pure water or clear solutions could thus move. We may, therefore, conclude that