

IRON RESOURCES CURRY COUNTY

Bedded deposits. The bedded deposits occur in Colebrooke schist, and are of special interest since those on Wake-Up-Riley ridge are of this type.

As no development work has been done on these deposits with the exception of the small, open discovery cuts required for a valid location of the claims, it was found very difficult to secure convincing data as to the form and size of the ore bodies. They have the appearance of lenses in the schist, which lie parallel to the foliation. Most of them appear to be small--only a few feet thick, but in one or two cases the cuts were entirely in ore, indicating a thickness of perhaps 10 feet or more. Mr. A. M. Collins, of Agness, who assisted in the location of the claims, and who acted as guide to the party during the examination of them, states that some of the location work was done by means of a dipping needle, and that in certain localities the needle stood practically vertically over an area of as much as 50 or 60 feet long by a score or more feet wide. This suggests that some of the ore bodies existing in the district are of considerably larger size than any of those exposed in the open cuts.

The iron mineral present is mainly magnetite (magnetic oxide of iron) which is considerably finer-grained and less noticeably crystalline than the same mineral in the boulder iron ores that occur in serpentine. It sometimes has a slightly brownish appearance, possibly due to hydration. This variety is considerably softer than ordinary magnetite and occasionally shows a slightly brownish streak; its appearance suggested the presence of psilomelane (impure hydrous oxide of manganese), and two or three fragments of the softer material yielded good bead tests for manganese when tested in the field. Two of the best looking samples, when analyzed, proved to contain respectively 28.29 percent and 23.47 percent iron, 12.95 and 7.30 percent manganese, and a trace of phosphorus, but no titanium, arsenic, sulphur or copper. From these facts, it seems likely that all this ore is mangiferous.

The iron ore is in most cases perfectly transitional into the schist, becoming less and less massive and pure-looking as the edges of the bodies are approached. A few cubes of unaltered pyrite, evidently of a secondary nature, were found in some of the cuts, but most of the ore, including the samples analyzed, contains no sulphides. In one or two cases quartz streaks, parallel to the schistosity of the country rock, occur near the outside of the ore bodies; and in one cut some small, black, radiating crystals of tourmaline are associated with the quartz. The small quartz veins already noted as being common in the Colebrooke formation cut across the masses of iron ore, proving, of course, that the latter were formed before the veins.

The schists in the neighborhood of the deposits, although composed principally of muscovite mica and quartz, are quite granular, have a somewhat sandy texture, and show a slightly greenish tint in some of the cuts. This is due, doubtless, to the presence of some chlorite. They seem to dip at a rather small angle to the southeast;

and this is also the direction of dip of the ore lenses or blankets.

The extent of the area over which the ore lenses are distributed is unknown, but the two cuts from which the samples analyzed were taken are both on the east side of the ridge, and are about 600 feet apart. There are several cuts on the west side of the ridge and some of these are probably at least a quarter of a mile from those first mentioned. From reputable authorities it was learned that a very large outcrop of the iron ore occurs in the first gulch southeast of Dry lake, about 7 miles southwest of the locality where the iron claims are located. An earnest effort was made to find this deposit, but no guide being procurable, the search was fruitless. The country rock all around the lake and for at least 2 miles further south is Colebrooke schist, and the presence of a large lens in that vicinity is not unlikely. It is unknown whether other lenses exist between the outcrop unsuccessfully sought and the main iron locality.

Until more development work has been done on the deposits, it will be a difficult matter to decide with any degree of certainty as to how they originated. There seems little doubt that the enclosing rocks are largely or entirely metamorphosed sediments. This makes it impossible to consider the ores magmatic segregations. Neither have they the characteristics of the Lake Superior iron deposits, which are believed to have been leached from the surrounding rocks and concentrated in their present positions. Most authorities regard iron deposits in schistose rocks as being genetically connected with igneous rocks contained therein, that is, they consider them to be in the nature of metamorphosed contact deposits; but the absence of igneous rocks in the area under consideration makes this theory untenable in the case in question.

In view of the facts outlined, it seems most likely that these deposits were laid down contemporaneously with the enclosing metamorphosed sediments. They may originally have been deposited as bog iron ore or glauconite, and been changed to their present condition as a result of the dynamo-metamorphism to which the whole formation was subsequently subjected. Their lenticular form is easily explained as due to the squeezing and shearing which accompanied the metamorphic processes.

While the theory just suggested seems, in the present state of our knowledge, to be the most probable one; it is recognized that subsequent more thorough investigations may prove it erroneous. The term "bedded deposits", as applied to the iron ores in the Colebrooke schist, should then be regarded as a tentative one.

Economic importance of the bedded iron deposits. It is unlikely that any of the lenses now developed by open cuts could be mined profitably even if transportation facilities were much more favorable than they are. It is not improbable, as already stated, that larger

lenses than those already located exist, and they may some time prove valuable. A careful magnetic survey of the region is needed, and, if this should indicate the presence of any considerable amount of ore, the means for transporting it would doubtless be provided, as there is a good market in the northwest for this material.

Impregnation deposits. The only iron ore found which can properly be classed as an impregnation deposit occurs on the ridge running easterly from Horse Sign butte between Horse Sign and Collier creek. The deposit in question is about 2 miles east of the butte proper, at an elevation of about 3,050 feet.

Figure 21 is a generalized section of the ridge above mentioned and shows that the country rock is of Myrtle age, but is intersected by two or more dikes of igneous material, and is faulted at one point. The iron ore is magnetite, and it occurs as an impregnation in Myrtle sandstone between two greenstone dikes. The contacts of the sandstone and igneous rocks are not well exposed so it is impossible to ascertain the width of the impregnated sandstone; but little pits scattered here and there over the surface indicate that it may be as much as 50 to 100 feet wide, and that it runs for some distance down both sides of the ridge. There seems no doubt that a large body of ore could be developed here. The beds appear to strike about N. 30° E., and dip 31° to the northwest.

The weathered ore looks like a highly jointed brown sandstone, but its great weight at once suggests the presence of metallic material; and the use of a hand-lens shows that the pores between the sand grains are completely filled with magnetite. So thoroughly impregnated is the sandstone that an average sample proved to contain 51.45 percent of iron. Phosphorous, sulphur, titanium, arsenic and copper are entirely absent.

It seems likely that this deposit originated by deposition from solutions developed in the neighboring serpentine during the serpentinization process. Such solutions would normally have led to the formation of one or more masses of the boulder type of iron deposits in the serpentine itself, but accidentally finding their way to the border of the serpentine, they worked outward through the greenstone, and impregnated the neighboring sandstone.

Economic importance of the impregnation deposit of iron. Although the iron ore as mined would be of rather low grade, it could readily be concentrated magnetically so as materially to increase its purity. As there is almost unlimited water power at no great distance this would not be an expensive operation.

The absence of detrimental elements, the apparently large size of the ore body, and the comparative ease with which it could be mined combine to make this deposit well worthy of a careful investigation, and of exploitation of transportation difficulties can be overcome.