

chemical agencies have been more active than in others, as at the Victoria Mine and some of the Copper Cliff mines, but in the case of the Creighton Mine, magmatic differentiation has, as Dr. Coleman remarks, been the main factor determining and favoring the development of this the largest nickel mine in the world.

The Rossland, B.C., ore bodies are likewise of igneous origin being associated with a monzonite, but the rock is very much more altered both as the result of dynamic and hydrochemical action. Secondary action is very much more pronounced and quartz and calcite, which are comparatively rare in the Sudbury rocks associated with the ore bodies, are both very abundantly represented in the Rossland district. In the case of the Rossland ore bodies, igneo-aqueous solution has played the most important part in their development.

After all, however, the origin of these ore deposits is largely a matter of theory and opinion, and strong arguments may be adduced to support the view either that they are the direct result of magmatic segregation or that the sulphides have been brought up from considerable depths to replace certain portions of the rock or fill up fissures and diorites caused by structural weaknesses. The real practical side of geological investigation consists in the outlining of these immense bodies of intrusive norite or gabbro with which the nickel and copper deposits of Sudbury are always associated, for although pyrrhotite and chalcopyrite are both found in connection with the older green schists and diorites, the deposits of these minerals in such cases are neither of large extent nor of unusual richness.

MR. INGALL—I am glad the point was brought out so strongly, that the difference between the gentlemen who are so fond of magmatic differentiation and the other theory is after all only a difference (or differentiation) of terms. These magma are a mixture of a lot of materials in various stages of separation from each other and the question of the actual temperature is not a matter of much practical importance, as when dealing with temperatures we may vary from something which we now think very cold to something we think very hot, and yet the real difference may be small. I remember when I was