

Shield can be prospected with excellent chances of finding new ore bodies. Except in a few instances, the age (except that they are Precambrian) and source of their associated ore deposits are unknown. By far the most of the gold deposits of the Shield and the majority of the large sulphide bodies are in rocks of Archæan age. The ore deposits may have been formed, however, in Proterozoic time. Flows of late Proterozoic age on Coppermine River and on Bathurst Inlet contain deposits of copper similar in many respects to copper deposits of similar age on Keweenaw Point in Michigan. Great bodies of copper-nickel ore at Sudbury and the silver-cobalt veins at Cobalt were almost entirely in late Proterozoic rocks and hence could not have been formed earlier. At these two places too it seems quite certain that the sources of the ores were the bodies of diabase with which the deposits are associated or else the sources from which the diabase came. It follows, therefore, that similar bodies of diabase elsewhere should be prospected for similar deposits.

The Grenville gneisses, limestones and other sedimentary rocks are the host rocks of deposits of graphite, mica, phosphate, feldspar, corundum, molybdenite, and bodies of iron ore, particularly magnetite. The ordinary metallic mineral deposits although not entirely absent are very rare. Large deposits of brucite have recently been found near Wakefield, Que., and Rutherglen, Ont., in rocks of the Grenville series. This mineral is used for making refractory brick and for the extraction of magnesium.

The extensive iron deposits of the United States are in rocks of Proterozoic age, some in Animikie (late Proterozoic) and some in Lower-Middle Huronian (early Proterozoic). The Animikie is not extensive in the southern part of the Shield in Canada but rocks probably of that age occur on Hudson Bay and in a belt through Coast of Labrador to Ungava Bay. In those places the rocks hold large iron deposits. Iron deposits of Michipicoten and Steeprock Lake may be Archæan or Proterozoic.

The bodies of Precambrian rocks in the Shield surrounded by granitoid rocks are very important for they contain so much of the ore mined in Canada. Many such bodies have been studied and subdivided into rocks of different types and ages and this subdivision has further narrowed the limits wherein ores of certain type can be found.

St. Lawrence Lowlands.—The underlying rocks of the St. Lawrence Lowlands are sediments, mostly little disturbed, ranging in age from Cambrian to Devonian. The Cambrian rocks consist of sandstone derived by the weathering of the old Precambrian surface. The Ordovician, Silurian and Devonian rocks consist largely of limestones and shales deposited during inundations by the sea. Since the Devonian, the history of the region has been one of erosion. The region was overridden by the ice-sheets of the Pleistocene. In general the rocks dip gently away from the Canadian Shield. In places they are broken by faults and in some places they are gently folded.

The only intrusive rocks of the region are the igneous masses forming the Monteregian Hills. These are eight in number, six of which occur along an east and west line stretching eastward from Montreal. The flanks of the hills consist of altered and hardened sediments and the centres are composed of the intrusive rocks, which include various alkali types such as nepheline syenite and essexite. The age of the intrusions is not known but may be later than Palæozoic.