

*Geology.*

The location of the claims and geology is shown in Figure 2 on a somewhat larger scale than on the general map. The old volcanics are cut by a series of intrusions of granite porphyry of varying size, which are arranged along a line striking north 77 degrees east. This direction is approximately parallel to the axes of folding of the volcanics, and probably represents some zone of weakness developed during folding. Between the intrusions on the Davidson and Otisse claims there are several dykes of porphyry, too small to be shown on the map, which indicate that the two are connected, and suggest that they and perhaps the others also, are only the projecting knobs of a much larger body beneath. If the line drawn through the exposed bodies of porphyry be projected east, it passes through the Kirkland Lake area. The Kirkland Lake porphyry is identical in every respect with the Matachewan porphyry. The occurrence of all these bodies along a single axis suggests that they have all been intruded along a single line of weakness in the older rocks; and makes it seem possible that prospecting in the intervening areas of Holmes, Burt, and Eby townships may reveal further bodies of the gold-bearing porphyry.

The porphyry and the older rocks are cut by many large dykes of the basalt of pre-Cobalt age, some of which are indicated in Figure 2.

The Davidson discoveries were made on the westernmost body of porphyry, the Otisse discoveries in the schist adjacent to the larger body of intrusive. The ancient volcanics on the Davidson claim have been greatly contorted and schistified, but have not been mineralized and enriched. On the Otisse claims the volcanics are closely folded, but not greatly contorted or schistified. In the neighbourhood of the mass of intrusive porphyry they are cut by dykes of porphyry and pegmatite and enriched by solutions depositing auriferous pyrite. The porphyry mass on these claims is the largest yet discovered in the district, being somewhat over one-half mile in length and 500-600 feet in width. On its north side trenching has exposed an ancient schistose conglomerate on claim 5380. Claim No. 5402 is as yet undeveloped and was not closely examined as it is heavily drift-covered. The geology of the other two claims, as far as the development work enables it to be mapped, is shown in Figure 3. A more detailed description of the geology follows.

*Volcanics.* The rocks of the volcanic complex (Figure 3) include basalt on the south side of the claims, overlain by basalt tuff to the north, the latter in turn overlain by rhyolite tuff. The separation of these is difficult, so much so that it was found impossible to map separately the basalt and basalt tuff. The separation is of importance mainly for the determination of structure, as ore-bodies have been formed in all of them. Ore-bodies are largest and most numerous in the tuffs, but this may as well be ascribed to the fortuitous location of the tuffs nearest the intrusive as to a greater susceptibility of the tuffs to alteration and mineralization. The composition of these rocks will, therefore, not be minutely described, further than to say that they all consist entirely of secondary minerals. Chlorite and albite are the principal secondary minerals, with some free quartz in the tuffs, and accessory leucoxene, magnetite, pyrite, and epidote in the basalts. Calcite in greater or less amount, secondary to and replacing the minerals mentioned, is invariably present.