Cobalt series and also older than certain diabase dykes. Further considerations fix the age somewhat more closely.

The deposition of the Kiask series was followed by folding movements of such intensity as to force the strata into almost vertical positions. Mountain-building always accompanies close folding, so far as known, so that it may reasonably be assumed to have occurred here. Batholithic intrusion, where it occurs, appears also to accompany folding movements or to follow them closely. The granitic intrusions of Matachewan area, therefore, probably accompanied or closely followed the folding of the Kiask series.

The Cobalt series was laid down on a peneplained surface of much the same contour as the present surface, as has been generally recognized by all geologists working in northern Ontario and Quebec.[1] Its base rests in turn on the ancient volcanics, the Kiask series, the granites, and the diabase dykes that intrude the granites. The reduction of the mountainous area to base level, exposing and eroding the granite batholiths, must have required a very long time.

The age of the granites of Matachewan area, on the above considerations, is, therefore, placed as slightly later than that of the Kiask series, and long enough before the deposition of the Cobalt series for a mountainous area to be reduced to base level.

DIABASE DYKES.

An interesting series of diabase dykes has been found in Matachewan area, occupying a place in the geologic column hitherto unfilled in this region, between the granite intrusives and the Cobalt series. The dykes are coarse quartz diabase, and in places are characterized by the presence of very numerous phenocrysts of labradorite feldspar sometimes 2 or 3 inches in diameter. The feldspars have the waxy appearance acquired through sericitization and kaolinization. Otherwise the diabases appear nearly as fresh as the Nipissing diabase. They cut the granites in the western part of Yarrow township, and, according to Burrows, in the eastern part of Cairo township. Two or three were observed cutting the Kiask series on Midlothian lake. They are especially numerous around the gold deposits in Powell township, where they cut the small porphyry intrusives. On the Davidson claims in Powell township the Cobalt conglomerate may be seen lying on the eroded surface of one of the dykes and including boulders of it.

The age of the dykes, as shown by the above facts, is later than the granites and earlier than the Cobalt series. The same considerations as were advanced in the case of the granites may be applied to the diabases, to show that the dykes are only a little later than the granites they intrude. In fact, the association of the diabase dykes with the granite masses strongly suggests that there may be a magmatic connexion between the two.

COBALT SERIES.

The Cobalt series has been studied by W. H. Collins, and fully described by him in recent publications of the Geological Survey of

[1] Collins, W. H., Geol. Surv., Can., Mem. 33, p. 51; Mem. 95, p. 74.
Wilson, M. E., Geol. Surv., Can., Mem. 39, p. 20.
This memoir, p. 37.