sulphate was calculated as calcite or calcium carbonate. Whenever t
was a large percentage of calcium carbonate the presence of magnes
hydroxide was assumed. This assumption was based mainly on the res
contained in a very interesting paper by Johnston and the hypoth
that the deposits under discussion have been formed at or very clos
the surface of the ground, under temperature and pressure condit
approximately that of the atmosphere (see pages 38 and 39). Altho
ferrous carbonate is a very usual impurity in magnesium carbonate
amount of ferrous iron in these earths is so low that it has, for the sak
convenience, been omitted from the calculations. (3) Any carbon diox
magnesia, and water of crystallization remaining after satisfying c
ditions (1) and (2) above was assumed to exist as basic magnesi
carbonate. In order to arrive at the probable compositions of th
hydrous magnesium carbonates use was made of the diagram, Figure
in the following way. The molecular proportions of magnesia, carb
dioxide, and water of crystallization remaining were plotted in th
relative proportions on the diagram. In the same diagram the miner
magnesite $MgCO_3$, hydromagnesite $4MgO.3CO_2.4H_2O$, nesquehon
$MgCO_3+3H_2O$, and brucite $Mg(OH)_2$ have been plotted according
their respective molecular proportions. The points representing the ava
able MgO, CO_2, and H_2O of the analyses lie, with very little variation,
a smooth curve, the nesquehonite-hydromagnesite-magnesite curve, and
lie between hydromagnesite and magnesite. The compounds wh
presence is thus indicated may belong to an isomorphous series of wh
hydromagnesite and magnesite are end members or they may be distin
compounds of compositions intermediate between hydromagnesite a
magnesite.

TOPOGRAPHICAL AND GEOLOGICAL RELATIONS.

The deposits of pure hydromagnesite all lie on flat ground near t
lowest part of the valleys in which they occur. The main deposit at Clint
lies at the foot of a steep slope on the east side of the valley (Figure
locality 3). Between it and the creek is a stretch of swamp a few feet low
in elevation than the hydromagnesite. At Watson lake the deposits occu
the same flat as the lake and the surface of the main deposit is about on
quarter mile south of and 4 feet or so above the level of the lake (Figure 6
At Meadow lake (Figure 5) the deposits are in a valley that forms part
the depression in which the lake lies and is without visible outlet. Both
the deposits at Riske creek lie on the flat valley floor near the stream an
a few feet above it.

At Clinton, unconsolidated sand and clay underlie the deposit. Th
hill lying east of the Clinton deposit is mostly drift-covered, but such ou
crops as were found were actinolite-schists and carbonaceous argillites
the Cache Creek series, and rocks of the same character outcrop abou
one mile to the south, and above the epsomite lake in elevation (Figure 8
In the railway cuts a mile or two to the north and several hundred fe
above the flat, there are many outcrops of serpentine and other rocks
Cache Creek age. These are capped by Tertiary basalts, but there is n
reason to doubt that the flat under the hydromagnesites and the hil
adjacent for several hundred feet above it, are underlain by Cache Cree
rocks. At Meadow lake the presence of angular basalt boulders in pro