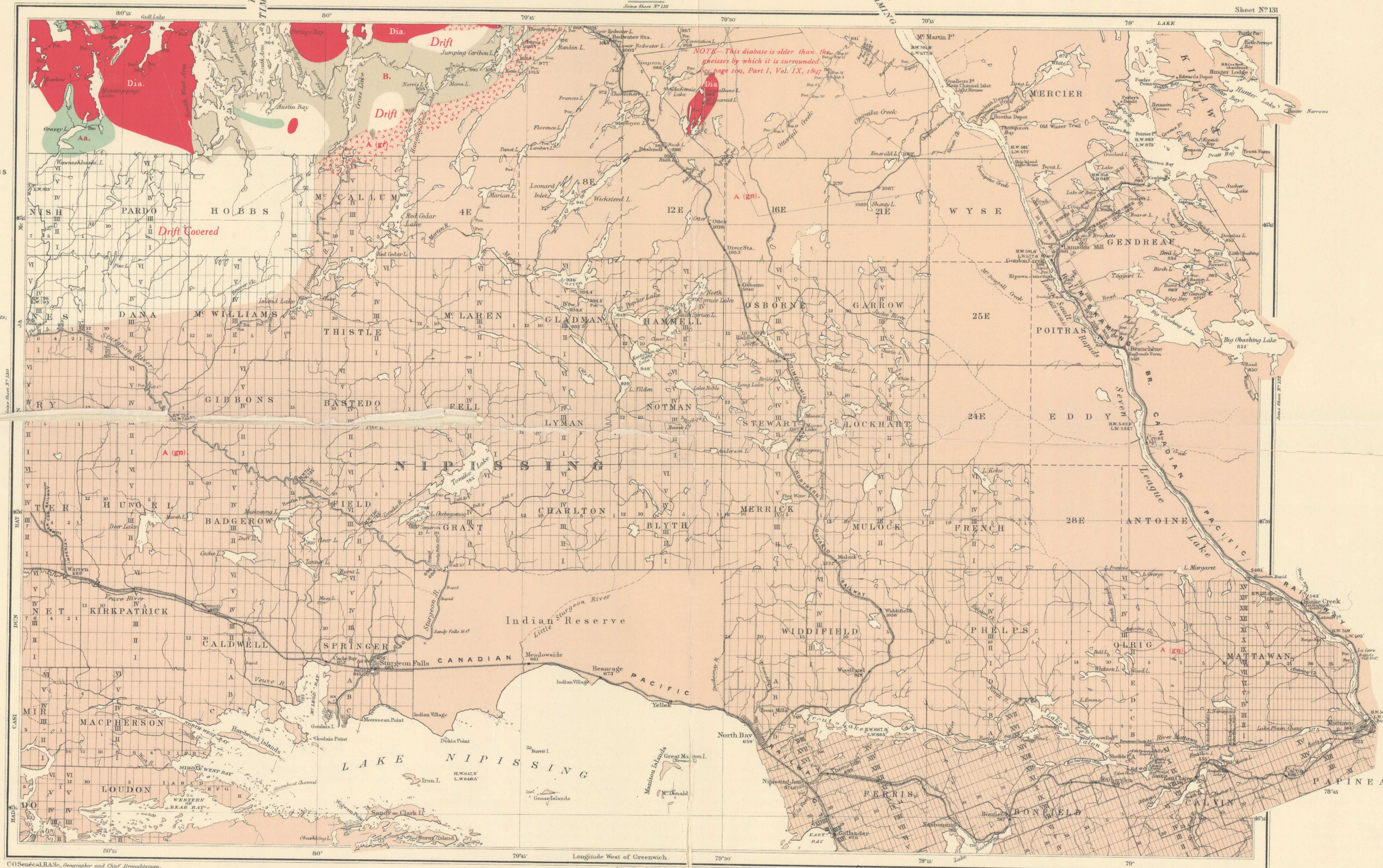
CANADA

DEPARTMENT OF MINES

GEOLOGICAL SURVEY BRANCH

Hon. W. Templeman, Minister; A.P. Low, Deputy Minister; R.W. Brock, Acting Director.

1908



Explanation of Colours and signs

PRE-CAMBRIAN

Lower Huronian

B. — *Slate, conglomerate*

Keewatin

Aa. — *Sericite, hornblende and chlorite-schists; massive greenstones, (Diabase, etc); Jaspilite (Iron formation)*

IGNEOUS

Post-Huronian

Dia. — *Diabase*

A (gn). — *Gneiss*

A (gr). — *Granite*

Geological boundaries

do do undefined

Glacial striæ

Strike

Dip and strike

Vertical dip

Horizontal strata

1210' *Heights in feet above sea-level*

Por. or P. *Portages*

Rap. or R. *Rapids*

Interprovincial Boundary

DESCRIPTIVE NOTES

Pre-Cambrian

Lower Huronian Slate and Conglomerate

The conglomerate forms the base of the Huronian of this district. The rock, as a rule, carries fragments of various rock types. which range in size from the smallest pebbles, to boulders sometimes several feet in diameter. Most of the pebbles are of various types of Laurentian granites, but greenstone pebbles from the Keewatin are often locally abundant, and occasionallu there are fragments of jaspilite derived from the iron formation of the Keewatin. The fine-grained matrix of the conglomerate is usually dark greenish in colour, and, wherever any considerable section is exposed, the conglomerate passes up into a slate by a gradual decrease in the number, and size of the pebbles. Over large areas, however, the upper beds cannot be said to be true slates, since pebbles are of very common occurrence. Some of the slates are evenly bedded, the lines of bedding being marked by a conspicuous banding. The formation, as a whole, occurs in an approximately horizontal position, but the strike and dip are constantly varying, and occasionally the beds are sharply folded; but more generally they form a series of low broad domes, resting unconformably on the granites, or on the upturned edges of the Keewatin schists. It is in these slates and conglomerates that most of the cobalt-nickel-arsenic-silver veins of the Cobalt district occur. At Wright's mine on the eastern shore of Lake Timiskaming, galena and calcite occur, forming the matrix of a breccia within this formation.

Keewatin

This series embraces the oldest rocks of the region, and consists largel[y] of dark, or light green hornblende, chlorite, [an]d sericite schists, or "greenstones." Most of th[e r]ocks are characterized by a well marked parallelism of the mineral constituents, but the different varieties shade into more massive forms, or occur with unaltered massive types. At times, these are with difficulty distinguishable from the Post-Huronian diabase. Associated with the Keewatin greenstones bordering the northern side of the Northeast Arm of Lake Timagami, also in the neighbourhood of Austin Bay—at the foot of the south arm of the same lake—in the area between Eagle Rock Lake and Emerald Lake, are widely extended outcrops of the "iron formation"; while more local developments of the same rocks occur in the Cobalt region, and in the district adjoining the east side of Lake Timiskaming. This consists largely of siliceous magnetite, interbanded with variously coloured jaspers and chert, with, in some instances, a small proportion of hematite. With the more typical greenstones, greenish, or greyish slaty rocks sometimes occur, and a much fractured quartzite is found on the southern shores of Rabbit Lake, and at several points on the shores of Eagle Rock Lake. The various rocks of the Keewatin now lie at high angles, and are often distinctly cut and penetrated by bodies of Laurentian granites. Besides the iron ores already referred to, the Keewatin contains, at times, certain characteristic minerals of economic importance. A mineralized belt extends from Net Lake to Vermilion Lake, the most prominent mineral being auriferous arsenopyrite (mispickel). The mineral is usually associated with varying quantities of chalcopyrite, pyrite, and pyrrhotite. Native gold has been found on Emerald lake to the west of Lake Timagami, in quartz veins associated with Keewatin rocks.

Igneous

Post-Huronian Diabase

Large areas of these dark, massive, at times very coarse-grained rocks, occur throughout the region, and are frequently found capping the Lower Huronian slate and conglomerate. They are also found in contact with most of the rock types of the region, and generally may be seen to have the form of widely extended, sheet-like bodies, often in approximately horizontal positions. In many instances they were probably formed as sills intruded into the older rocks, from which the overlying strata has since been removed by erosion. In the Cobalt region it is believed that the fissures now occupied by the cobalt-silver ores in the Lower Huronian slate and conglomerate, were probably formed by the disturbances which accompanied the intrusion of the diabase, and that the ores may have been deposited from mineral-bearing waters associated with the irruption. In James township on the Montreal river, and Fabre township on the eastern shores of Lake Timiskaming, the diabase is cut by pink feldspathic veins usually rich in calcite, and quartz, and carrying silver-bearing minerals, galena, pyrite, specular iron ore, etc.

Laurentian Granites and Gneisses

The granite types of the Laurentian are commonly biotite-bearing varieties, and are often coarse-grained with large crystals of feldspar. The rocks frequently have a pink, or red color, and distinctly cut the members of the Keewatin series, but are much older than the Lower Huronian conglomerate, to which they furnish many of the enclosed pebbles and boulders. The granites on both sides of Lake Timiskaming appear to grade gradually into gneissic forms. The latter show many variations, and often pass abruptly from diorite-gneiss into granite-gneiss, the latter being by far the most prevalent type. In certain areas to the east of Lake Kipawa the occurrence of areas of crystalline limestones, and nepheline-syenites of the Grenville series, has been reported. The Laurentian is cut by numerous pegmatite dikes, which, in places, may yield mica of economic value.

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SOURCES OF INFORMATION

Surveys by A.E. Barlow. 1892-94, 1905.
Plans of surveys by Crown Lands Depts. Ontario and Quebec.
Surveys by Canadian Pacific Railway.
Geology by A.E. Barlow.

PROVINCES OF ONTARIO AND QUEBEC
Nipissing District Ont. and Pontiac County, Que.
(Lake Nipissing Sheet)

Scale 4 miles to 1 inch = $\frac{1}{253440}$

1 0 5 10 15 Miles

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