

LEGEND

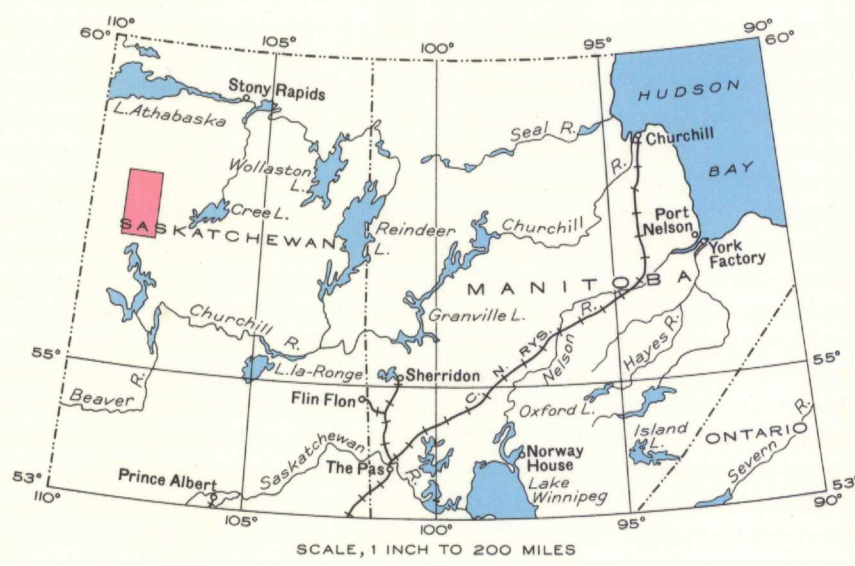
- PROTEROZOIC (LATE PRECAMBRIAN)**
- 4 ATHABASKA FORMATION: sandstone
- ARCHEAN (EARLY PRECAMBRIAN)**
- 2 Mainly granite and granite-gneiss
 - 3a: highly granitized biotite and biotite-garnet gneiss and schist; quartzite; interbedded volcanic rocks; 3b: hornblende gneiss and schist; diorite, gabbro and pyroxenite; some interbedded sediments and granitic intrusives
 - 1 1a: gabbro and anorthosite, diorite and diorite-gneiss, andesite; 1b: schistose andesite

Area of outcrop and small outcrop, in part examined, and in part sketched from aerial photographs.
Geological boundary.....
Fault.....

Portage.....
Building.....
Lake and stream (position approximate).....
Rapid.....
Marsh.....
Height in feet above Mean sea-level..... 1475'

Geology by S.C. Ellis, 1935, and by D.L. Downie, 1938.
Compiled by J.C. Sproule, 1939.

Base-map prepared by the Topographical Survey, 1939, from Federal Government map published in 1939. Cartography by the Drafting and Reproducing Division, 1940.



DESCRIPTIVE NOTES

The area may be entered by aeroplane or by either of two well-known canoe routes. One of these extends from the railway terminus at Big River or at Meadow Lake down Beaver river and thence through Ile la Crose, Aubichon Arm, Churchill, Turnor, Frobisher, and Wasekimo lakes. From the north end of Wasekimo lake, just south of the map-area, the route leads overland to Clearwater river by way of three portages and two small lakes. The combined length of the portages is 3.6 miles. The other or Clearwater River route, is from Waterways, Alberta. Between Waterways and the portage route from Wasekimo lake there are 11 portages with a combined length of 6.3 miles.

The northern half of the area is nearly flat. It is underlain by Athabaska sandstone and is covered by a light mantle of predominantly sandy, glacial drift. Local topographic relief is supplied by groups of drumlins, up to 250 feet high, and by eskers as much as 150 feet in height. These have a general southwesterly trend. Present also in the sandstone area but not confined to it, are numerous narrow, sharp ridges, composed principally of sand and fragments of sandstone. They closely parallel one another and extend normal to the direction of ice movement. Some converge at acute angles and others connect with esker-like ridges, but most of them are separate, distinct features. They vary from a few yards to 3 miles long and may be as much as 45 feet high. The southwest corner of the area is a swampy lowland within which the underlying, crystalline Precambrian rocks rarely outcrop. The northeast border of this lowland is marked by part of a recessional moraine that has been traced for 150 miles. The moraine crosses obliquely southeast into the adjoining Porter Lake map-area. Between this swampy lowland and the area underlain by Athabaska sandstone there are many low, rocky hills between which the depressions are partly filled by glacial debris.

The oldest rocks are presumed to be mainly of sedimentary origin. They are predominantly biotite and biotite-garnet gneisses and schists, and quartzites, but include small amounts of interbedded volcanic rocks, most of which have been altered to hornblende schists. These rocks are, for the most part, steeply inclined and have been extensively granitized by bodies of acid intrusives (2) thus forming an assemblage of mixed rocks (3a). The band of basic intrusives and volcanic rocks (1) may be the equivalent of a band of greenstones exposed along Virgin river in the adjoining map-area to the east. These greenstones are mainly andesitic volcanic rocks and appear to dip westerly. Between the two bands is an assemblage of mixed rocks (3b) composed mainly of hornblende gneiss and schist, diorite, and gabbro. In part at least these are altered volcanic rocks. Interbedded with them are subordinate amounts of gneissic and schistose sediments and granitic intrusives. The general structural arrangement of formations is thus suggestive of a broad fold, possibly synclinal, the axis of which is occupied by the rocks of group 3b. Included with the granitic intrusives of the area (2) are minor amounts of diorite, pegmatite, and small remnants of older rocks.

The Athabaska sandstones (4) lie unconformably and mainly horizontally over all the above-mentioned formations. They are massive, cross-bedded, and thinly banded rocks and may be of Palaeozoic age.

Little prospecting has been done in the area and no ore deposits have yet been discovered. The bodies of gabbro and diorite, particularly those associated with quartz and pegmatite in group 3b, carry pyrite, pyrrhotite, chalcopyrite, and magnetite, disseminated along and adjacent to fractures, joints, and shear planes. No important concentrations of these minerals have been found.

MAP 578A
UPPER CLEARWATER RIVER
NORTHERN SASKATCHEWAN

Scale, 253,470 or 1 Inch to 4 Miles
Approximate magnetic declination, 25° to 28° East.

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UPPER CLEARWATER RIVER
578A