CANADA
DEPARTMENT
OF
MINES AND TECHNICAL SURVEYS
GEOLOGICAL SURVEY OF CANADA

PRELIMINARY SERIES

SHEET 105 B

LEGEND

CENOZOIC

QUATERNARY
PLEISTOCENE AND RECENT

18 Glacial till; gravel, sand, and silt; lake clay; volcanic ash

TERTIARY(?) AND QUATERNARY

17 Vesicular olivine basalt

MESOZOIC

CRETACEOUS(?)

16 SEAGULL AND HAKE BATHOLITHS AND STOCKS: mainly biotite leuco-quartz monzonite and alaskite, in places with quartz-tourmaline concentrations and miarolitic cavities

JURASSIC AND/OR CRETACEOUS
CASSIAR INTRUSIONS (relative ages unknown)

15 15a, CASSIAR BATHOLITH: mainly biotite quartz monzonite and granodiorite, in part sheared and altered; 15b, RAM STOCK: saussuritized biotite-hornblende quartz monzonite and granodiorite, in part sheared; 15c, LOGJAM STOCKS: mainly biotite-hornblende quartz monzonite with basic borders; 15d, mainly biotite quartz monzonite and granodiorite

14 Dioritic rocks; diorite, granodiorite, quartz diorite

13 Ultramafic rocks: olivine-bearing clinopyroxenite, dunite; serpentinized and metamorphosed equivalents

POST-MISSISSIPPIAN, PRE-CRETACEOUS(?)

12 12a, pebble and cobble conglomerate, greywacke, limestone; minor quartzite, chert; 12b, andesitic volcanic breccia and tuff; minor lava(?), chert; 12c, feldspathic quartzite, subgreywacke, greywacke, quartzite, grit, argillite; relatively rich in microcline, may be older or younger than, or in part equivalent to, 12a and 12b

PALAEOZOIC

MISSISSIPPIAN AND (?) PENNSYLVANIAN
UPPER MISSISSIPPIAN AND (?) YOUNGER

11 Upper Division: chert, slate, argillite, hornfels; minor greywacke; 11a, limestone and dolomite, in part with chert nodules, skarn; 11b, sandy and conglomeratic tuff

10 Lower Division: chert and quartzite pebble and cobble conglomerate, chert, quartzite, slate, argillite, hornfels

MISSISSIPPIAN
LOWER(?) AND MIDDLE MISSISSIPPIAN

9 Limestone and dolomite, in part with chert nodules, skarn

LOWER AND/OR MIDDLE MISSISSIPPIAN

8 Chert, hornfels, argillite, slate, phyllite, quartzite, limestone, in part with chert nodules; skarn, tremolitic marble, dolomite

DEVONIAN AND MISSISSIPPIAN
UPPER DEVONIAN, LOWER AND MIDDLE (?) MISSISSIPPIAN

7 Greenstone, chlorite schist and quartzite, phyllite, slate, argillite, chert; 7a, greenstone, chlorite schist; 7b, argillite, slate, phyllite, chert, subgreywacke, grit, conglomerate, sericite-biotite schist and quartzite; 7c, limestone and dolomite, in part with chert nodules; 7d, quartz-albite-mica gneiss, albite-actinolite schist

DEVONIAN
MIDDLE DEVONIAN

6 Grey and black fetid dolomite, calcitic dolomite, quartzite, calcareous quartzite

SILURIAN
LOWER AND/OR MIDDLE SILURIAN

5 Thin-bedded shale and limestone, grey-buff dolomite, buff dolomitic siltstone and quartzite

CAMBRIAN(?) TO SILURIAN(?)
MIDDLE CAMBRIAN(?) TO MIDDLE SILURIAN(?)

4 Slate, argillite, phyllite, thin-bedded limestone; 4a, calcareous hornfels, limestone, skarn; in part equivalent to map-unit 5

CAMBRIAN
LOWER CAMBRIAN

3 Limestone; minor dolomite; argillite; 3a, limestone and dolomite marble, skarn

PRECAMBRIAN(?) AND PALAEOZOIC

CAMBRIAN AND (?) EARLIER
LOWER CAMBRIAN AND (?) EARLIER

1 2 1. Limestone, thin-bedded limestone, and slate or phyllite; minor argillite, slate, dolomite; 1a, marble, skarn; in part equivalent to map-unit 3
2. Quartzite, slate; minor grit and conglomerate; 2a, hornfels; 2b, biotite schist and quartzite, commonly garnetiferous; in places near east and north borders of Cassiar Batholith contains staurolite, andalusite, and/or kyanite; 2c, biotite schist, quartzite, and gneiss, with sills, dykes, and irregular bodies of pegmatite

Geological boundary (defined, approximate, assumed)
Bedding (horizontal, inclined, vertical)
Schistosity, gneissosity, cleavage (horizontal, inclined, vertical)
Fault (defined, approximate, assumed)
Anticline (position approximate)
Syncline (position approximate)
Drift ridge or rock groove (showing direction of ice movement)
Fossil locality

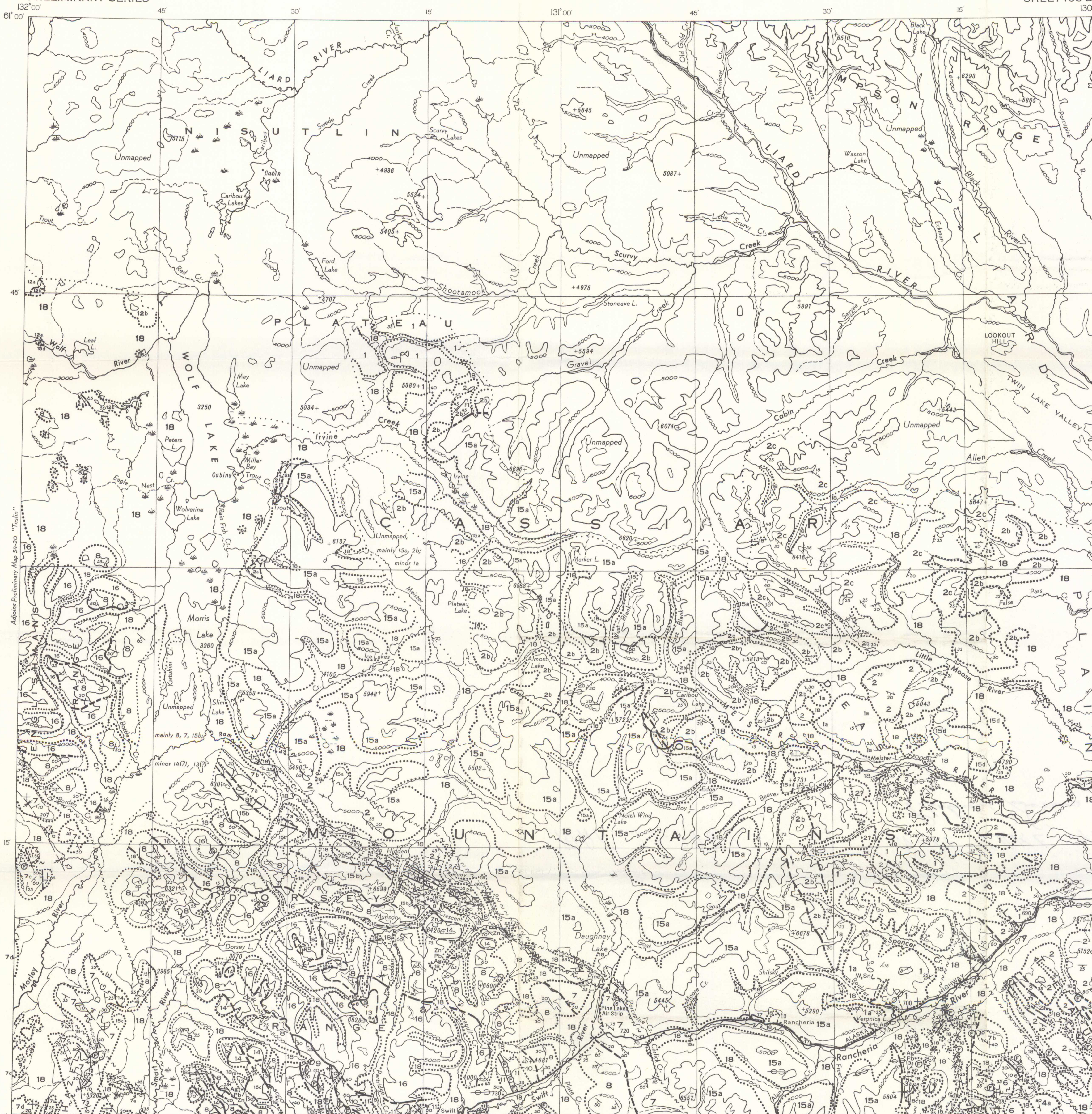
MINERAL SYMBOLS

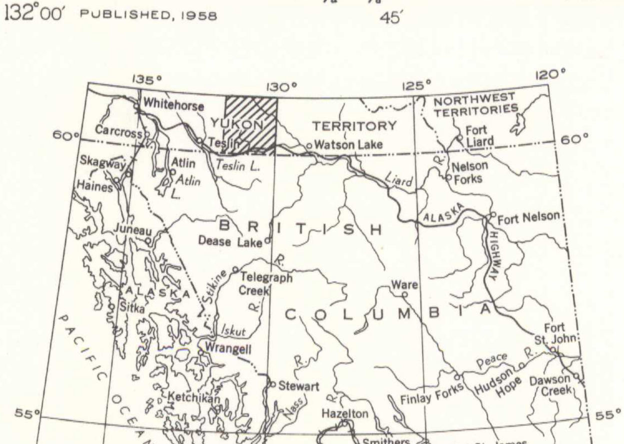
Fluorite ... Fl	Tin .... Sn
Lead ...... Pb	Tungsten .... W
Silver ..... Ag	Zinc .... Zn

Geology by W. H. Poole, 1951, 1952, 1953, 1954, 1955

Cartography by the Geological Cartography Unit, 1958

In response to public demand for earlier publication, Preliminary Series maps are now being issued in this simplified form, thereby effecting a substantial saving in time. There is no loss of information, but the maps will be clearer to read if all or some of the map-units are hand-coloured.





MAP 22-1957

WOLF LAKE

YUKON TERRITORY

Scale: One Inch to Four Miles = $\frac{1}{253,440}$

Miles 4 2 0 4 8 12

Air photographs covering this area may be obtained through the National Air Photographic Library, Topographical Survey, Ottawa, Ontario

22-1957

LEGEND

Main highway
Other roads
Trail
Mile post, Alaska Highway 710
Provincial boundary
Marsh
Contours (interval 1,000 feet) 5000
Height in feet above mean sea-level +4975

Approximate magnetic declination, 33° 08' East

DESCRIPTIVE NOTES

The southern part of Wolf Lake map-area is accessible from the Alaska Highway and the northeastern part from Liard River, which is there navigable by small river boats and canoes. Pack-horses can be used in all parts of the map-area. Suitable aircraft can land on most of the lakes and the Pine Lake airstrip is maintained for emergency use.

Wolf Lake map-area occupies the northern end of the rugged, northwesterly trending Cassiar Mountains. Nisutlin Plateau borders the mountains on the west and north. The northern extensions of Dease Plateau and Liard Plain border the mountains on the east and separate them from the Simpson Range of the Pelly Mountains in the northeast. The divide between the Yukon and Mackenzie River drainage follows an irregular line through the central part of the map-area.

Near Rudy Lakes and south of the Alaska Highway, a fossiliferous Lower Cambrian limestone unit (3) is underlain by a quartzite unit (2). Near lower Rancheria River bridge, the quartzite unit (2) is underlain by a dominantly limestone unit (1). North of the bridge, units of quartzite and limestone, included in units 2 and 1, respectively, appear to underlie structurally the aforementioned units 1, 2, and 3, but may be equivalent to them. Thicknesses of the units probably range from several hundred to several thousand feet. These sections and most others in the map-area seem exceedingly thick, but evidence of repetition is either lacking or indistinct. Northwestward along trend, these three units are infaulted and infolded, so that their thicknesses and identity are not everywhere certain. The east contact of the Cassiar Batholith (15a) northeast of Caribou Lake is bordered by schist, quartzite, and gneiss and pegmatite (2c). The quantity of pegmatite varies irregularly from zero to nearly 95% at the batholithic contact (15a). Rocks of map-unit 4 are generally highly folded and appear to form the loci of major faults. Two or three hundred feet of Lower and/or Middle Silurian graptolitic rocks underlie from 100 to 200 feet of non-fossiliferous dolomite (together 5) which, in turn, underlie typical quartzite of the Middle Devonian rocks (6) presumably disconformably. The Middle Devonian rocks (6) are about 2,000 feet thick and underlie the Devonian and Mississippian rocks (7) conformably.

Devonian and Mississippian rocks (7) occupy parts of two faulted major synclines on each side of the Cassiar Batholith (15a). In the southeast, apparently well over 8,000 feet of strata are exposed. On Hazel Ridge these rocks are about 9,500 feet thick, the base of the section being exposed west of the map-area. The greenstone (7a), lying above and east of the limestone and dolomite bed (7c), apparently pinches out to the northwest in Teslin map-area. In the fault-slice near Hidden Lake, rocks of map-unit 7 lie conformably on Middle Devonian rocks (6).

Mississippian rocks (8) in the Dorsey Range are about 14,000 feet thick west of the Pine Lake airstrip and about 25,000 feet thick north of Dorsey Lake. Most of the argillaceous rocks have been metamorphosed to hornfels and hard argillite by the underlying Seagull and Hake Batholiths and Stocks (16). The Mississippian rocks (8) overlie conformably the greenstone-bearing assemblage (7) along most of the northeast border of Dorsey Range.

The youngest known Palaeozoic sedimentary rocks (10, 11) in the map-area are about 5,000 feet thick. Rocks of map-unit 12 apparently unconformably overlie those of map-units 8 and 11. Conglomerate (12) near Wolf River contains pebbles and cobbles of schist, quartzite, granitic rocks, and limestone. Tentative correlation with nearby parts of Yukon and British Columbia suggests that map-unit 12 may be Triassic and/or Jurassic in age.

East of the Cassiar Batholith (15a), intrusive rocks are few (excluding pegmatite of map-unit 1c), whereas west of the batholith the stratified rocks are cut and metamorphosed by intrusive rocks (14, 15, 16) and many dykes and sills too small to be shown on the map. Evidence from other map-areas indicates that most of the granitic rocks (15, 16) were intruded during the Jurassic and/or Cretaceous periods. The granitic rocks of map-unit 16 appear to be younger than those of map-units 14 and 15. The dioritic rocks (14) were probably emplaced slightly earlier than those of map-unit 15, but the time of emplacement of the ultramafic rocks (13) is unknown.

As much as 250 feet of flat-lying olivine basalt (17) occur in the Rancheria River valley. The top of the basalt is marked by a relatively flat bench, but the base is everywhere concealed by drift (18). The lavas were probably erupted in the late Tertiary and/or Pleistocene.

Pleistocene ice probably at one time covered the whole map-area, and appears to have moved easterly in the eastern part of the Cassiar Mountains and southeasterly in the Liard Plain.

Two northwesterly trending major synclines, separated by an anticlinal area occupied by the Cassiar Batholith (15a), dominate the structure of the map-area. Moreover, an anticline lies a few miles west of Hazel Ridge, and another apparently passes through rocks of map-units 1 and 2 south of the Rancheria River bridge. These regional structures plunge southeasterly from zero to 15 degrees and have vertical or steeply dipping axial planes. Map-units 2, 3, and 4 ?, south of lower Rancheria River bridge, appear to form southeast-plunging, near-isoclinal folds. In the southeast, the mechanics of faulting are not well understood. However, the rocks (4, 5, 6, 7) of the interior of a major syncline have apparently been broken by tear faults and down-faulted against older rocks (1, 2, 3, 4). These northerly trending faults probably continue northward, but could not be traced. Along the northeast border of Dorsey Range, Middle Devonian and younger rocks (6, 7, 8) have been down-faulted against older rocks (1, 2, 3, 4). Along the southwest border of Dorsey and Englishmans Ranges, Mississippian rocks (8) have been apparently down-faulted against older rocks (7). Along the southwest contact of the Cassiar Batholith (15a) as far northwest as Ice Lakes Creek, the rocks (1, 2, 3) have been down-faulted against the batholith.

Prospecting in the map-area began in the 1870s with the discovery of placer gold on Liard River and its tributaries Rainbow, Scurvy, Sayyea, and Cabin Creeks. In subsequent years, the map-area was largely neglected, except during the 1930s with the advent of bush flying. With construction of the Alaska Highway in 1942, prospecting was renewed but was generally restricted to the country adjacent to the Highway. Several base metal properties have been found. Veins of silver-bearing galena cut Lower Cambrian dolomite (3) along the east contact of the Cassiar batholith (15a) near the Highway and similar veins cut this batholith south of the Highway. Northeast of Boulder Creek quartz veins containing wolframite, cassiterite, and fluorite cut contorted limy phyllite. Southeast of Crescent Lake, sphalerite and pyrrhotite occur in skarn in hornfels along the borders of diorite bodies (14) and a few miles southwest of these deposits silver-bearing sphalerite and galena outcrop in the bed of a small creek. West of Logjam Creek, silver-bearing galena-sphalerite-quartz veins cut hornfels along the border of a diorite body (14). Fluorite and boron minerals occur in many places along the borders of the batholith (16) in the Dorsey Range. West of the headwaters of Partridge Creek, a tourmaline-fluorite-quartz vein cutting hornfels contains small cassiterite crystals. East of Wolf Lake, two occurrences of fluorite, one a replacement of limestone and the other a quartz-fluorite vein, were noted. Asbestos veinlets not exceeding 1/8 inch in width were found in the ultramafic bodies near Logjam and Goddart Creeks.

MAP 22-1957
WOLF LAKE
YUKON TERRITORY
SHEET 105 B