DEPARTMENT OF THE INTERIOR

U. S. GEOLOGICAL SURVEY

EXPLANATION

Qgs — Glacial stream deposits - sand and gravel.

d — Mafic dike

Oa — Attean Quartz Monzonite (Ordovician) - Granite and granodiorite.

Oap — Quartz porphyry and felsite (Ordovician).

O-pЄdi — Diorite and quartz diorite (Ordovician, Cambrian, or Precambrian).

am / pЄc — Chain Lakes metamorphic complex (Precambrian) - Massive feldspathic diamictite; zone of amphibolite, am.

Bedrock exposure

Contact, approximately located; short dashed where inferred.

High angle fault, approximately located; short dashed where inferred.

60 — Dip and strike of compositional layering and aligned fragments.

inclined vertical

70 — Dip and strike of foliation.

inclined vertical

50 — Dip and strike of cleavage, including fracture cleavage and slip cleavage.

inclined vertical

60 — Dip and strike of quartz vein.

inclined vertical

80, 80, 70 — Dip and strike of joint. Point of observation at center of symbol for individual joints, for joint sets, point of observation is at origin.

inclined vertical

20, 30, 35 — Trend and plunge of axis of minor fold of foliation, may be combined with foliation symbol. Where symbols are combined, their intersection indicates point of observation.

NOTES

All rocks in the map area have undergone greenschist facies metamorphism of varying intensity. This alteration is most pronounced in rock in which cleavage is prominent. The greenschist facies metamorphism has overprinted an upper-amphibolite or granulite facies metamorphism in the Chain Lakes metamorphic complex. A minimum 570 m.y. age for the high-grade metamorphism is indicated by argon release spectra on hornblende from a large clast in the massif (Biederman, 1984). The greenschist facies metamorphism occurred prior to the emplacement, less than a mile to the southwest, of the Spider Lake (Seven Ponds) pluton dated at about 372 m.y. by argon release spectra (Heizler and Lux, 1984).

The Chain Lakes metamorphic complex in this part of the massif varies little in texture or clast content. Layering of any sort is extremely rare, although it is more common in the southeast part of the map area. A prominent north-trending zone of aligned, small fragments of metavolcanic rock lies along the ridge on the north spur of Moose Mountain. The rock in the map area is primarily characterized by irregularly distributed, small, but variably sized and shaped mafic clots, in addition to the common quartz clasts and less abundant clasts of metamorphic rock. These clots do not have the light-colored mafic-free areas around them characteristic of the "flecky gneiss" that occupies a belt within the complex southeast of the map area (Boudette and Boone, 1976; Biederman, 1984). An elongate clast of felsic metavolcanic rock 4.5 m by 12.5 cm (about 15 feet by 5 inches) was observed in diamictite exposed in the Moose River near Lowelltown suggesting that the clasts were enclosed in a soft matrix at time of deposition.

The amphibolite in the southeast corner of the map is actually a zone containing layers or blocks of amphibolite which in one exposure resembles metamorphosed pillow lava. Some small blocks are partly surrounded by a white-weathering feldspathic material.

The age of the diorite and quartz-diorite is uncertain. The unit could be the age of the Attean (lower Ordovician as determined by Lyons and others, 1983), the equivalent of the Cambrian Boil Mountain Complex (Boudette, 1982), or the age of the Chain Lakes complex (E. L. Boudette, written communication, 1984). The diorite and quartz-diorite is difficult to distinguish in outcrop from granular clast-poor Chain Lakes complex except that the latter contains the ubiquitous clasts of quartz.

The Attean Quartz Monzonite in the Skinner pluton is granodioritic in composition. Prismatic aggregates of biotite, chlorite and epidote in some of the granodiorite suggest the former presence of hornblende. The quartz porphyry grades texturally into the Attean, but some of the fine-grained felsite dikes may be of slightly different age. These, particularly where they cut the coarse grained Attean, tend to be much more cleaved or sheared than the wall rock. Some poorly exposed masses of felsite in the Chain Lakes diamictite are possibly clasts.

The irregularity of the contact between the Chain Lakes complex and the Attean Quartz Monzonite found in the Skinner pluton suggests that the pluton is barely unroofed. It is probably satellitic to the large mass of Attean in the Attean and Spencer Lake quadrangles to the east (Albee and Boudette, 1972).

The mostly north- to north northeast-trending cleavage is believed to have formed during metamorphism of the Paleozoic strata in the region. It lies at an acute angle to the northeast-trending normal fault that bounds the massif on the northwest and west and separates it from Devonian strata to the northwest (Harron, 1973; Westerman, 1979; Boudette, 1982). This fault lies just northwest of the United States - Canada boundary in the northwest corner of the map area. In the southwest part of the map area, a similar cleavage roughly parallels the boundary of the Devonian Spider Lake pluton located across the border in Canada. It could be attributed to crustal adjustments prior to and during emplacement of the Devonian pluton or to deformation along a zone parallel to one of the numerous northwest-trending faults projecting into the massif from the southeast (Boudette, 1982).

The glacial stream deposits shown are those encountered during reconnaissance traverses. They are fragmentary ice-contact deposits, primarily kames, kame terraces, and ice-channel fillings. Alluvial and colluvial deposits were observed in some valleys but their boundaries were not systematically mapped and accordingly are not shown. The wide valley bottoms in the area of the Skinner pluton probably contain extensive Pleistocene and Recent lake and alluvial deposits. These may not be thick because bedrock lies at shallow depth in much of this area. Glacial till and colluvium mantle the lower slopes of hills and mountains, primarily on their west and northwest sides. Extensive areas of bedrock are exposed on their upper slopes, ridges, and summits, and on some of their east-and southeast-facing lower slopes.

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RECONNAISSANCE GEOLOGIC MAP OF THE SKINNER - LOWELLTOWN AREA, SOMERSET AND FRANKLIN COUNTIES, MAINE

by

Richard Goldsmith

1985

This map is preliminary and has not been reviewed for conformity with U. S. Geological Survey editorial standards and stratigraphic nomenclature