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BELKNAP MOUNTAINS RING COMPLEX, WHITE MOUNTAINS SERIES, NEW HAMPSHIRE

Introduction

The Belknap Ring Complex contains the most complete petrologic sequence of any of the White Mountains Series complexes. To more nearly complete the petrologic facies, a nepheline syenite was collected from the Red Hill Complex, and a volcanic rock from the Ossipee Complex.

The Belknap Complex K/Ar dates are 158 and 149 m.y. for the diorite and Conway granite. (Foland 1971).

Dr. Wallace A. Bothner, University of New Hampshire, has worked in the Belknap Complex and conducted the writer, Dr. Forbes Robertson, over the area and recommended the collecting sites. Many of the sites are described in a Field Trip log.

References

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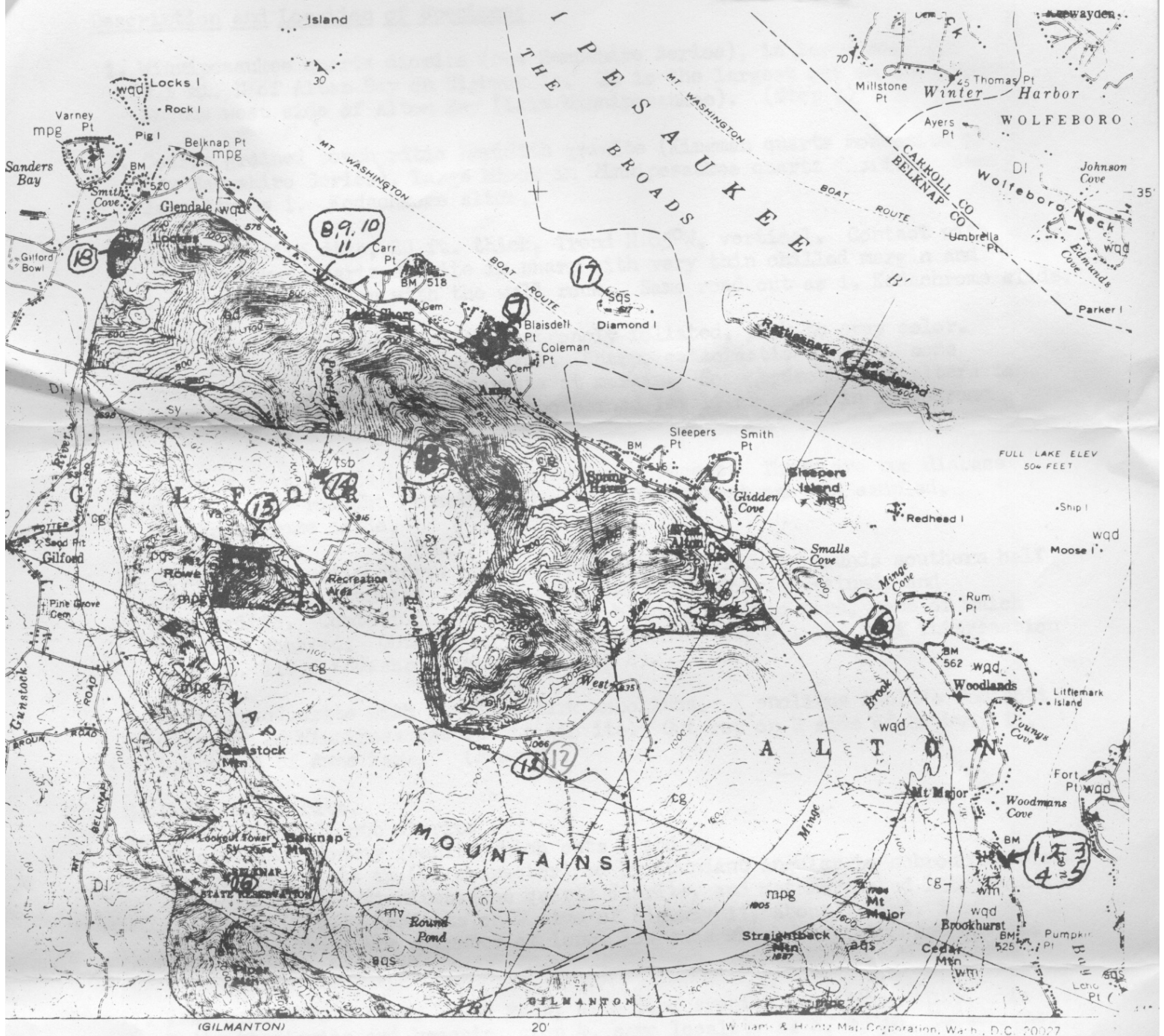
Geologic Maps

Geologic Map and Structure Sections of the Winnepesaukee Quadrangle, New Hampshire; 1940 (reprinted 1966) Geology by Alonzo Quinn (Red Hill), David Modell (Belknap Mts.) and Louise Kingsley (Ossipee Mountains).

Xerox copy of Belknap Mts. area reproduced to show location of specimens.

Geologic Map and Structure Sections of the Mt. Chocorua Quadrangle, New Hampshire: 1938, Geology by A. P. Smith, Louise Kingsley (Ossipee Mts.), A. W. Quinn (Red Hill), and Marland Billings.

Maps available at New Hampshire Geological Survey, University of New Hampshire, Durham, NH 03824. Dept. of Earth Sciences.



Location of specimens 1 - 18, Belknap Mountains Complex. Xerox copy of SE part of "Geologic Map of the Winnepesaukee Quadrangle, New Hampshire" Geology by A. Quinn, D. Modell, and L. Kingsley, 1940. 1966 reprint.

Specimens 20, 21, Red Hill Complex, NW corner of Winnepesaukee Quadrangle.

Specimen 19. Ossipee Mountains Complex, SE part Mt. Chocorua Quadrangle.

Description and Location of Specimens

1. Winnepesaukee quartz diorite (New Hampshire Series), in large road cut 3.1 mi. N of Alton Bay on Highway 11. It is the largest cut on the highway on the west side of Alton Bay (Lake Winnepesaukee). (Stop 1)
2. Coarse grained porphyritic Meridith granite (Kingman quartz monzonite of New Hampshire Series). Large block in Winnepesaukee quartz diorite. Same locality as 1. Kodachrome slide.
3. Quartz syenite dike, 20 ft. thick, Trend N 85°W, vertical. Contact with Winnepesaukee quartz diorite is sharp with very thin chilled margin and no apparent reaction with the wall rock. Same road cut as 1. Kodachrome slide.
4. Banded syenite ignimbrite dike, strongly foliated, pink to gray color. Dike is 10 ft. thick at road level. Sharp, cataclastic contact, some spherulites and rolled phenocrysts at margin. Some hydrothermal alteration. Dike takes a sharp bend or roll above road level, as shown in kodachrome slide. Same roadcut as 1.
5. Diabase dike, White Mountains age or more recent. There are two diabase dikes in the roadcut (specimen 1), the southernmost one was sampled. See Kodachrome slide.
6. Albany porphyritic quartz syenite, partial ring dike surrounds southern half of the Belknap Mountain Complex. Typical pink, coarse grained, and porphyritic. Contact characterized by black aphanitic zone, some of which has been sheared. Outcrop on N side of Highway 11, 0.1 mi. E of intersection with Rt. 110. Kodachrome slide. (Stop 2).
7. Ames monzodiorite with abundant dark xenoliths. Xenoliths include Endicott diorite and Winnepesaukee quartz diorite. Outcrop on N side of Highway 11, 0.4 mi. N of Ames Farm. (Stop 3).
8. Endicott diorite.
9. Brecciated Endicott diorite
10. Fine grained Conway granite which cuts 8 and 9. Breccia fragments in (9) characterized by abundant angular to subrounded blocks of diorite, some Winnepesaukee quartz diorite, and metamorphosed Littleton formation (Dev.) Roadcuts on W side of Highway 11, about 1.2 mi. S of Glendale. There are a number of long, low cuts which show abundant breccia. Stop 4. Kodachrome slides.
11. Vent agglomerate dike, Rowes vent, with pink syenite xenoliths. Dike cuts Endicott diorite and breccia, stop 4, same locality as 8, 9, 10. Kodachrome.
12. Conway granite, just off Rt. 11A on Glidden Road (first roadway S of Grant Road) $\frac{1}{4}$ mi. S on road intersection 1066 Winnepesaukee geologic map.
13. Coarse Cobble Hill Syenite (Mark Louiselle thesis) or Belknap syenite, Winnepesaukee geologic map. Stop 6. At top of steep hill, gunstock Acres. Approx. position of geologic map, $\frac{1}{4}$ in. NE of D of Gilford and 1 in. SW of Ames.
14. Trap syenite breccia, Mt. Rowe entrance. See Tsb outcrop shown on Winnepesaukee geologic map between O and R of Gilford, on Poorfarm Creek. Fine grained glassy "trap" (trachyte) with abundant fragments of brecciated Belknap syenite.

15. Rowes vent agglomerate, in small quarry, just S of fence separating Mt. Rowe Ski area and Gunstock recreation area. Stop 8. See Va on Winnepesaukee geologic map between L and F of Gilford. Near the east end of the mapped area.
16. Belknap Mountain syenite, in stream bed on Belknap Mountain Lookout Tower Road, second stream downhill from parking lot, and on the Winnepesaukee geologic map, just west of the B of Belknap State Reservation.
17. Quartz syenite on W end of Diamond Island. (in Lake Winnepesaukee) Diamond Island is just W of Rattlesnake Island, and just east of Ames Farm. See specimen 7 location.
18. Gilford gabbro on lower west slopes of Locks Hill, about $\frac{1}{2}$ mi. SE of Glendale. Contains clots of black spheroids. Stop 5. Access easy from N end of outcrop area and E of small stream.
19. Volcanic rock from outcrops in Pollard Brook, N base of Johnson Mountain, Ossipee Mountains Complex, Mt. Chocouru Quad. About 15 mi. NNE of Belknap Mtn. About 2 mi. SW of South Tamworth. See South Tamworth on Highway 25.
20. Nepheline (sodalite?) syenite on Fire Tower road, $\frac{1}{2}$ mi. N of Red Hill road, approx. elev. 1100 ft., see Red Hill Complex, NW cor. of Winnepesaukee geologic map. (The fire tower is actually on the Mt. Chocouru geologic map.)
21. Coarse syenite from stream bed just E of Fire Tower Road (specimen 20), off Red Hill Road and upstream from 618 elevation marked on Winnepesaukee geologic map. Large tabular slabs are actually float.

The augite monzodiorite body on the south flank of Belknap Mountain was not collected. The rock is quite coarse grained and very massive. No fresh material found in smaller blocks which could be managed with a sledge hammer.

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