TRIPS A-3 and B-2

ALPINE GLACIATION OF MT. KATAHDIN

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Introduction

Mt. Katahdin is the highest mountain in Maine (1601m) and, with a local relief of about 1450 meters, is one of the largest mountains east of the Rocky Mountains. The mountain is composed of quartz monzonite (Katahdin granite informally) and is part of a large Devonian batholith that intrudes Lower and Middle Paleozoic sedimentary and volcanic rocks. The relief of the mountain can be explained in part by the greater amount of erosion of the sedimentary rocks compared with that of the more durable plutonic rock. However, the Katahdin pluton underlies much of the lowland south and east of the massif, so differtial erosion can not completely explain the relief of the mountain above the surrounding countryside.

Erratics found by Tarr (1900) and Antevs (1932) near the summit of Mt. Katahdin and by Caldwell (1972) on other mountains in the region support the view that Mt. Katahdin was covered by continental ice sometime in the Pleistocene. There is no direct evidence that the highest elevations were covered by Late Wisconsin ice, although recent work by Davis (1978) suggests that they were.

Features Formed by Alpine Glaciation

Cirques

In the Mt. Katahdin area cirques occur only on those mountains underlain by Katahdin quartz monzonite. Most of the cirques (6) were formed on the massif which includes Mt. Katahdin and the other high peaks which lie above timberline. The 3 largest cirques are on the east side of the mountain and have headwall heights which range from 720 meters to about 100 meters. These 3 great cirques have flat to concave floors and steep headwalls composed largely of bedrock. Postglacial rockfall and avalanche debris does mask the lower slopes of the cirque headwalls and sidewalls. The total aspect of these cirques is one of remarkable freshness, especially when compared with other cirques in northeastern United States assumed to be occupied by glaciers in the Late Wisconsin (Craft, 1979).

Aretes

The three east-facing cirques are separated by aretes. The most typical arete is Hamlin Ridge, which separates North Basin cirque from Great Basin cirque (Figure 1). The arete which separates Great Basin cirque and South Basin cirque, Cathedral Ridge, has been shortened and

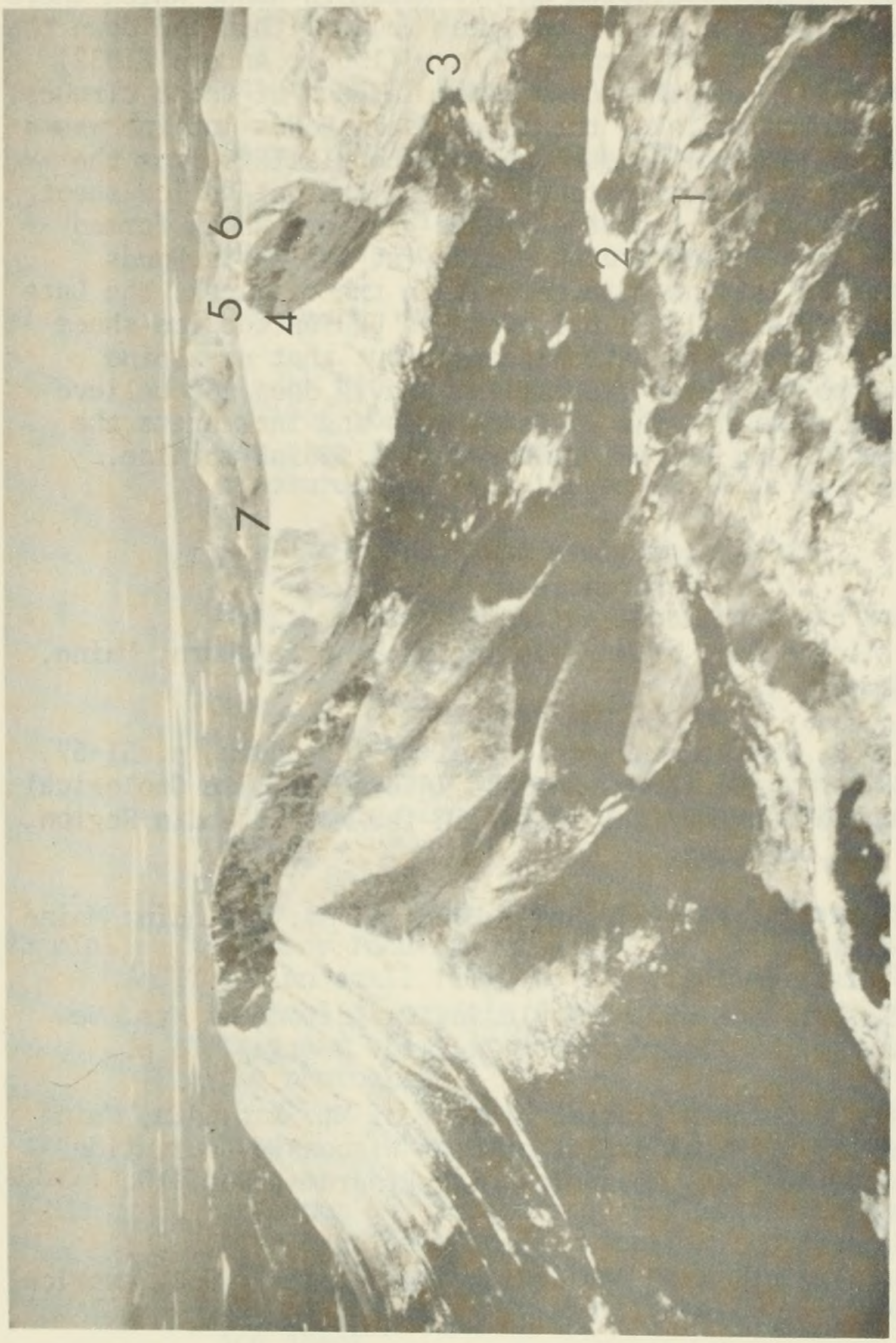

Figure 1. Oblique aerial view of Mt. Katahdin looking west. Numbers locate field trip stops which are discussed in text.

lowered by glacial erosion and mass wasting. The most spectacular serrate mountain crest is the Knife Edge but it may not technically be an arete because there is no cirque on its South side. However, the long narrow saw tooth ridge crest and the over 2000 foot (720m) drop into South Basin more than make up for this deficiency.

Moraines

The aspect of alpine glaciation on Mt. Katahdin about which there is the greatest controversy concerns moraines found within and down the mountain from the three largest cirques. Tarr (1900), Antevs (1932) and Caldwell (1965, 1972) identified moraines in each of these cirques. In addition these authors believed the large Basin Ponds moraine was a medial moraine formed between the combined alpine glaciers from the three cirques and the still active tongue of the Laurentide ice sheet. The common interpretation was that the alpine glaciers which formed these moraines were both contemporaneous with (at the Basin Ponds Moraine), and postdated (at the moraines within the cirques), the Late Wisconsin ice sheet. Davis (1978) believes the Laurentide ice sheet covered Mt. Katahdin during the Late Wisconsin but that no alpine glaciers postdated the ice sheet glaciation. Davis does not believe that there are moraines within the large cirques and interprets the Basin Ponds Moraine to be a lateral rather than a medial moraine.

References

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Road Log

Mileage	
0	Togue Pond Camps. Starting time is 6:30 A.M. There is a fee of $5.00 per car without State of Maine license to enter Park so double up in cars as much as possible. We might try to pay for permits the previous night to save time.
0.3	Enter Baxter State Park. Road is built on large esker.
0.4	Bear right at fork toward Roaring Brook campsite.
1.0	Rat Pond on left. If day is clear, the caravan will stop 10 minutes to allow photographs of Mt. Katahdin skyline.
1.8	Rum Brook.
5.0	Windey Pitch. Sandy washed drift and sandy till in which in 1966 there were sand-filled ice wedge structures. We can stop here on return trip. This ridge has no bedrock exposures and is believed to be an end moraine.
6.8	Avalanche Brook and Avalanche Field.
8.4	Roaring Brook Campsite. Bear left and park in designated area.

Trail Log

0	Trail log from Roaring Brook Campsite. Approximate mileage and hiking times (does not include time at stops) are given.
1.5 (45 min.)	Stop 1. Halfway Rock (half way between Roaring Brook and Chimney Pond Campsites). The sandy drift exposed on trail and on small ridge to the right of trail has noticeable content of erratic fragments. Figure 1 shows location of this and other stops which are identified by numbers on the photograph.
1.9 (1 hr.)	Stop 2. The Basin Ponds are dammed by the Basin Ponds Moraine (Figure 1, locality 2). The moraine is composed of about 99% Katahdin quartz monzonite and is inferred to have been deposited by ice issuing from the three great cirques to the west. The moraine has also been interpreted as a lateral moraine of the Late Wisconsin Laurentide ice sheet.
2.3 (1 hr. 15 min.)	North Basin cutoff.

3.0 (2 hrs.) Stop 3. Blueberry Knoll and North Basin cirque. Blueberry Knoll is at the mouth of what is probably the best preserved cirque in New England (Figure 1, locality 3). From Blueberry Knoll the Basin Ponds Moraine and associated hummocky topography to the east are clearly visible.

The evidence bearing upon the origin of Blueberry Knoll and the age of the last Alpine glaciation in the North Basin cirque will be reviewed. If we appear to be making good time, we should hike into the cirque to view the topography on the cirque floor at close range.

3.2 (2 hrs. 15 min.) Hamlin Ridge trail. If the weather (and the leader) is still holding up, we will make the somewhat arduous climb up the Hamlin Ridge arete, in order to better view the features under discussion.

3.9 (4 hrs.) Stop 4. Hamlin Ridge. In North Basin near the head of the cirque, but separated from the headwall by a depression some 60 meters wide and 6 to 12 meters deep, is a well defined accumulation of boulders. The feature resembles a protalus rampart, formed by rockfall rolling over permanent snow banks.

4.0 (4 hrs. 15 min.) Stop 5. Hamlin Peak. Imposing and instructive views of North Basin, Hamlin Ridge, and Basin Ponds Moraine to the east, South Basin, the Knife Edge, and the Table Land toward the south. To the west, on the other side of the large basin called The Klondike, is a range of mountains with an unusual pattern in the forests. This pattern is produced by bands of dead but mostly standing trees. Although these bands may have something to do with the wind, they cannot be properly called blowdown or windthrow, as they commonly are.

4.3 (4 hrs. 30 min.) Stop 6. Howe Peaks trail. View down the length of North Basin cirque.

4.5 Caribou Springs. Caribou were common on the mountain during the 18th and 19th centuries but were all killed off by 1900. In the 1960's there was an abortive attempt to repatriate the Caribou when several drugged, pregnant cows were lifted by helicopter to near this spot. After they came to, none were ever seen again, as far as I know.

5.2 (5 hrs. 15 min.) Stop 7. The Saddle. Here we will separate the men (who will go down the mountain) from the boys (who may want to climb to the summit). The summit is a hard mile from here, our cars somewhat over 5 miles away. Those who accompany the leader down the saddle slide be very careful of loose rocks.

6.5 (6 hrs.)	Chimney Pond. Spectacular view of the headwall of South Basin beyond the rangers camp.
10.0 (7 hrs. 30 min.)	Roaring Brook and end of trip.