Aretes Encyclopedia Article

Aretes

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Aretes

Aretes are mountain (alpine) structures carved by glacial **ice**. To be more exact, they are carved by the continual action of cirques wearing away the tops of high elevation mountains. Consequently, it is necessary to understand the formation and erosional properties of cirques before the identification of an arete can occur.

Nivation, or the process of snow becoming compacted ice, begins at the mouth of small, high elevation valleys. As the ice continues to grow, its increased weight bears down on the surrounding **rock** and grinds the solid base into smaller debris. Cycles of daily melt and nighttime freeze produce frost-wedging, which in turn, loosens more surrounding rock. Meltwater carries the loosened debris down steep tributaries and away from growing deposits of ice. This ceaseless carving of the mountain forms a small bowl-like depression of ice that, over time, advances up the valley slope. At this point, the ice has identifiable properties and structure. Geologists call these structures cirques.

Cirques do not generally appear in isolation on higher elevation peaks. They are usually found in groups. In mountain ranges where ice sheets have not covered the surface and sheared the peaks, the action of encroaching cirques is free to carve distinctive patterns. As cirques grow and increase in number, they join or coalesce to form a continuous ridge of ice. When a ridge of cirques exists on the opposite side of the peak, the dual carving action meets to form a steep and serrated-looking crest of rock. This knifelike edge is called an arete. These imposing structures can be very treacherous and difficult to access. They are characteristically found in the Alps, Himalayas, and Andes mountains and give the ranges their distinct and rugged appearance. When three aretes meet on a particular peak, a distinctive type of tip emerges and is named a matterhorn peak. The tip is formed by the meeting of three aretes, which form a trapezoidal figure. The most famous matterhorn is found in the Alps where it is still being carved by cirques and defined by aretes.

See Also

Glacial Landforms; Mountain Chains