b17 Lasting landscape features due to Pleistocene glaciation < moraines, drainage rearrangement >

> I would say with Fabricius [abbot Aquapendente (1533-1619)], 'Let all reasoning be silent when experience gainsays its conclusion.' The too familiar vice of the present age is to obtrude as manifest truths, mere fancies, born of conjecture and superficial reasoning, altogether unsupported by the testimony of sense. —William Harvey (1578-1657). [5]
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> The American Quaternary Association and members (including The Friends of the Pleistocene) study all aspects of the Quaternary Period (the last ~2 million years of Earth history).[6]

Where mountain glaciers (160,000 at last count)[7] presently carve the landscape, the origin of erosional and depositional features further downslope almost suggest themselves to have originated during an Ice Age when the glaciers were longer. Much more remarkable, being not immediately self-evident to the casual observer, is evidence of enormous ice sheets where none have existed in historical time and where today even the closest glacier can be more than a thousand miles away.

Mountain glaciation, with glaciers confined to valleys, makes the scenery more precipitous by leaving: horns, cirques, aretes, U-shaped valley cross sections, truncated spurs, and ribbon falls.

Continental glaciation, with ice sheets that overwhelming the landscape, changes the scenery by subduing it. Given Ice Age theory, easy to recognize features left by continental glaciation are:

erosional, such as bedrock surface polish, chattermarks ("lunate" when horns point downflow, as is common, and "concentric" when horns point upflow), striations (fine to deep scratches in the direction of ice flow), roches moutonnées (steep, plucked, "lee" slope of each points downflow and the less steep, ground down, "stoss" slope of each points upflow),[8] and perched potholes;

depositional, such as hummocky moraines, outwash plains, eskers, kames, and crag tails; and

scenic such as deranged drainage, drumlins (gentle slope points downflow), kettles, and pluvial lake shorelines.

Unbiased observations are desirable in science. Unfortunately, much simply goes unnoticed or passes as unremarkable until a theory exists to focus and guide observations. Some examples:

20 miles to the north of Stonehenge, England, is the possible outcrop source for the giant sarsen stones of its outer circle. How these stones, which weigh some 50 tons each, were transported across Marlborough Downs and up steep Redhorn Hill is hard to explain. But, given glacial theory, likely the erected stones that astonish us and perhaps the Druids who arrived in Britain in the middle of the 3rd century BCE (Iron Age), were erratics that lay conveniently near at hand for humans in the 2nd millennium BCE (Bronze Age) to shape and erect where now found.[9]

In North America, continental ice sheets spread from low-altitude snowfields on the Canadian Shield. Ice that flowed south scooped out the basins of the Great Lakes and the Finger Lakes in continental platform sediments where these lap onto the crystalline rocks of the Canadian Shield. In northeastern Wisconsin, the southerly flow of the ice was diverted by a plateau to leave a "Driftless area" of rough topography in southwestern Wisconsin. Elsewhere, the ice overwhelmed and smoothed the terrain as far south as the present river courses of the Ohio and the Missouri rivers.[10]

Deposition of ground, end (terminal), marginal, and recessional moraines by the ice sheet, and accumulations of stratified drift from meltwater, have deranged the drainage that existed before glaciation. Missouri and Ohio rivers have ice-edge incised valleys that now divert headwater drainage that preglacial stream courses previously carried *north*.[11]

In the east (***Figure b17.1***), the 10,000+ foot thick ice sheet deeply submerged the highest mountains and flowed, ground-based, far beyond the present coastline when Ice-Age lowered sealevel exposed as an extension of the present coastal plain much of what is now the continental shelf. ❑