

Definition: **mountain** from *Philip's Encyclopedia*

Part of the Earth's surface that rises to more than 2000ft (510m) above sea level. They are identified geologically by their most characteristic features, and are classified as fold, volcanic, or fault-block mountains. Mountains may occur as single isolated masses, as ranges or in systems or chains.

Summary Article: **mountain**

From *The Columbia Encyclopedia*

high land mass projecting conspicuously above its surroundings and usually of limited width at its summit. Although isolated mountains are not unusual, mountains commonly form ranges, comprising either a single complex ridge or a series of related ridges. A group of ranges closely related in form, origin, and alignment is a mountain system; an elongated group of systems is a chain; and a complex of ranges, systems, and chains continental in extent is called a cordillera, zone, or belt.

Global Distribution and Impact on Humanity

Most of the great mountain systems now in existence were developed fairly late in geologic history. The greatest mountain masses are in North and South America, including the Andes, Rockies, Sierra Nevada, and Coast Ranges of the United States, Canada, and Alaska; and the Eurasian mountain belt, in which lie the Pyrenees, Atlas, Alps, Balkans, Caucasus, Hindu Kush, Himalayas, and other ranges. Among notable single peaks are Everest, K2 (Godwin-Austen), and Kanchenjunga in Asia; Aconcagua, Chimborazo, and Cotopaxi in South America; McKinley, Logan, and Popocatepetl in North America; Mont Blanc and Elbrus in Europe; Kilimanjaro, Kenya, and Ruwenzori in Africa.

Mountains have important effects upon the climate, population, economy, and state of civilization of the regions in which they occur. By intercepting prevailing winds they cause precipitation; regions on the windward side of a great range thus have plentiful rainfall, while those on its lee side are arid. Mountains are in general thinly populated, not only because the cold climate and rarefied atmosphere of high regions are unfavorable to human life, but also because the higher reaches of mountains are unfit for agriculture. Mountains frequently contain valuable mineral ores, deposited out of solution by water or by gases. Mountains act as natural barriers between countries and peoples; they determine the routes followed by traders, migrants, and invading armies. The difficulties of travel and communication in mountain regions tend to favor political disunity.

The Origins of Mountains

Mountains and mountain ranges have varied origins. Some are the erosional remnants of plateaus; others are cones built up by volcanoes, such as Mt. Rainier in Washington, or domes pushed up by intrusive igneous rock (see rock), such as the Black Hills of South Dakota and the Henry Mts., Utah. Fault-block mountains (see fault) are formed by the raising of huge blocks of the earth's surface relative to the neighboring blocks. The Basin and Range region of Nevada, Arizona, New Mexico, and Utah is one of the most extensive regions of fault-block mountains.

All the great mountain chains of the earth are either fold mountains or complex structures in whose formation folding, faulting, or igneous activity have taken part. The growth of folded or complex mountain ranges is preceded by the accumulation of vast thicknesses of marine sediments. It was first

suggested in the late 1800s that these sediments accumulated in elongated troughs, or geosynclines, that were occupied by arms of the sea. While some of the sediment was derived from the interior of the continent, great quantities of sediment were apparently derived from regions now offshore from the continent. For examples, sedimentary rocks of the Appalachian Mts. formed in a vast geosyncline that extended from the Gulf states northeastward through the eastern states and New England, and into E Canada. It is now recognized that great thicknesses of sediment can occur wherever there is subsidence (lowering of the earth's crust).

The best modern analogues of geosynclines appear to be the thick deposits of sediment making up the continental shelves and continental rises (see ocean). Most geologists now believe that the geosynclinal sediments found in mountain ranges were initially deposited under similar conditions. The period of sedimentation is followed by folding and thrust faulting, with most high mountain ranges uplifted vertically subsequent to folding. The movements of the earth's surface that result in the building of mountains are compression, which produces folding, thrust faulting, and possibly some normal faulting; tension, which produces most normal faulting; and vertical uplift. Mountains are subject to continuous erosion during and after uplift. Sharp peaks are formed and are subsequently attacked and leveled. Mountains may be entirely base-leveled, or they may be rejuvenated by new uplifts.

The ultimate cause of mountain-building forces has been a source of controversy, and many hypotheses have been suggested. An old hypothesis held that earth movements were adjustments of the crust of the earth to a shrinking interior that contracted and set up stresses due either to heat loss or gravitational compaction. Another hypothesis suggested that earth movements were primarily isostatic, i.e., adjustments that kept the weights of sections of the crust nearly equal (see continent). A third hypothesis, popular from the early 1960s to today, ascribed mountain-building stresses to convection currents in a hot semiplastic region in the earth's mantle.

According to the plate tectonics theory, the lithosphere is broken into several plates, each consisting of oceanic crust, continental crust, or a combination of both. These plates are in constant motion, sideswiping one another or colliding, and continually changing in size and shape. Where two plates collide, compressional stresses are generated along the margin of the plate containing a continent. Such stresses result in the deformation and uplift of the continental shelf and continental rise sediments into complex folded and faulted mountain chains (see seafloor spreading; continental drift).

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