western than on the eastern side. From Valparaiso to the Isthmus of Panama, a distance of 3000 m., the great Andes themselves are but the upper or subaerial portions of mountains whose bases are 10,000 ft. below the surface of the Pacific Ocean. South of Valparaiso the 10,000-foot contour lies well out from the coast, but opposite the Straits of Magellan it approaches within 150 m. of the coast-line. On the east side of the continent the 1000-foot contour passes to the east of the Falkland Islands showing that this group stands upon a submerged shelf or shoulder of the continent. From the mouth of the Rio de la Plata northward the 1000-foot submarine contour keeps at a distance of from 50 to 150 m. off the shore nearly to Bahia, Brazil; from Bahia northward and around Cape St Roque this same contour is close inshore, and the ocean-floor sinks abruptly to a depth of 5000 ft. North-west of Cape St Roque the continental shelf of shallow waters widens until opposite the mouth of the Amazon the 1000-foot contour is 300 m. off the coast. The broad shelf follows along this part of the coast as far as the island of Trinidad, west of which it narrows, though the islands along the northern shores of Venezuela all stand upon and form parts of this shallow continental shelf.

The striking features of the land relief of South America are: (1) The great Andean mountain chain with its accompanying narrow plain lying between it and the Pacific Ocean. (2) The Brazilian plateau with the Serra do Mar and Serra do Espinhaço near the Atlantic and spreading westward and northward to the heart of the continent. (3) The highlands of Guiana and Venezuela between the Orinoco and the mouth of the Amazon. (4) The lowlands that spread out along the three main lines of continental drainage, namely the Orinoco, the Amazon and the Paraguay basins.

The physical features of the west coast are bold, and, in many parts, extremely picturesque. From Cape Horn, where the peaks of the submergea southern end of the Andes form the islands of Tierra del Fuego to the lsthmus of Panama, the great Cordillera follows the coast-line closely and at an even distance from it. The low coastal belt between the ocean and the mountains has an average width of about 40 m., and on rare occasions, when the weather is favourable, the mountains are visible from the sea nearly all the way from the Straits of Magellan to Panama. South of 41° S. the coast is characterized by a vast system of fjords and islands, probably produced by the recent submergence of a mountain system and the consequent invasion of its steep-sided valleys by the ocean. The

many islands along this part of the coast, including Chiloe, Welling­ton and the Tierra del Fuego group itself are but the high portions of these mountains that have remained above water, while Smyth Channel and the other sounds on the west coast and the Straits of Magellan 400 m. long and 4 to 20 m. wide, are the submerged valleys. In Smyth Channel at many places the glaciers flow nearly or quite down to sea-level. Some of the islands are steep-sided, barren and uninhabited peaks rising to an elevation of 4000 ft. above sea-level. North of 41° S. the west coast is but little indented, and there are but few good ports. Along the northern part of the continent from Guayaquil to Panama the coastal belt is covered with tropical vegetation; but from a little south of Guayaquil to 30° S. much of the coast is a sandy, arid and barren alkali desert. Across this arid belt flow the streams that descend from the high mountains, and along these are fertile valleys. Many of the smaller streams, however, do not reach the sea but dry up on their way across the arid coastal plain.

The Cordillera is a broad ridge upon which rise many great isolated peaks. Near its northern end the range divides: one branch, the Western Cordillera, continuing northward near the coast ; the Merida branch swings eastward and ends with the northern side of the island of Trinidad, while a third division, the Sierra de Perija, runs north- ward between the valley of the Magdalena and Lake Maracaibo. The western slope of the main Cordillera is steep, and is scored by narrow steep-sided valleys; the eastern slope is usually more gentle, and the valleys are less precipitous. Upon the Cordilleran ridge rise many of the highest peaks in the world. The following are some of the most noted, with their elevations.@@1

|  |  |  |  |
| --- | --- | --- | --- |
| Peak. | Country. | Elevation. | Snow-line  (approximate). |
| Aconcagua | Argentina | ft.  23,080 | ft.  17.500 |
| Mercedario | Argentina | 22,315 |  |
| Tupungato | Argentina | 2i,55o | — |
| lllampu (Sorata) . | Bolivia | 21,500 | — |
| lllimani .... | Bolivia | 21,030 | — |
| Chimborazo . | Ecuador | 20,545 | 16,700 |
| Juncal .... | Chile | 20,180  19.613 | — |
| Cotopaxi .... | Ecuador | I50∞ |
| Antisana .... | Ecuador | 19.335 | 16,000 |
| Cayaιribe .... | Ecuador | 19,186 | 15,000 |
| Toíima .... | Colombia | 18,300 | — |
| Misti | Peru | 17 >934 | — |
| Maipo .... | Argentina | 17.670 | — |
| Sierra de Santa Marta | Colombia | 16,640  15,918 | — |
| Pichincha .... | Ecuador | — |

The snow-line of the mountains is generally lower on the east than on the west side. Of the Andean peaks those of Cotopaxi, Tungu- ragua, Maipo and Sangai are the highest active volcanoes in the world. There are many glaciers in the Andes even beneath the equator itself; and though these glaciers are small and mostly confined to the highest peaks, toward its southern end along Smyth Channel and in the Straits of Magellan, they are large and flow far down the slopes, and at several places enter the sea.

The eastern side of the continent is in strong physical contrast with the western. North of the Strait of Magellan the coast is flat as far as the northern part of Rio Grande do Sul. From latitude 29° 50' to 19° 30' the Serra do Mar makes this the most picturesque portion of the east coast of South America. The mountains rise in many places directly from the seashore to an elevation of 2000 ft. In places these form bare granite walls, while in others they are covered from base to summit with the most luxuriant tropical vegetation. On this part of the coast are some of the finest and most beautiful harbours in the world, notably those of Rio de Janeiro, Santos and Victoria, formed by a depression that submerged the coastal valleys.

The range or group of mountain ranges known under the general name of Serra do Mar falls away toward the north and west in a gently sloping plateau commonly called the Brazilian highlands. On this Brazilian plateau the highest points of which the elevations are known are as follows :—

|  |  |  |
| --- | --- | --- |
| Peak. | Brazilian State. | Elevation. |
| Itatiáya  Itajúba or Tembé .  Organ Mountains .  Frade  Caraça  ltambé  Jtacolomf  Pyrcneos | Rio de Janeiro São Paulo  Rio de Janeiro Espirito Santo Minas Geraes Minas Geraes Minas Geraes Goyaz | ft.  9823  7800 7321  6770  6412 5959 5748  4536 |

North of latitude 20° the high mountains swing inland and the coast is low as far as latitude 17° 25'; north of this the coast is

@@@1 Various authorities differ in their estimates of these elevations.