

fluctuations of seasons, be covered with several feet of earth. The same reasons will account for the duration of the Inca villages that cover many of the hills, and which a copious shower would entirely wash away. The granite on its eastern side was coarse-grained, presenting more of the ordinary appearance of that rock.

Immediately eastward of the granite district commence the trap rocks, consisting for the most part of porphyry. Dr. Pickering traced the line of junction for some miles, the hills on one side being of granite, on the other porphyry. The eastern limit of the trap region is supposed to be distant some twenty miles from the western. The porphyry resembles the Swedish, and that in the vicinity of Boston. Many porphyry pebbles, supposed to be of this formation, were found on the beach at Callao, having, it is to be presumed, been carried there by the action of the water-courses.

Next comes the plateau of the Cordilleras, which is formed of sedimentary rocks; this includes the silver mines, and the highest peaks, and is apparently of the same age as the coast. Much of the rock is argillaceous. At Baños an argillaceous limestone was used for burning, and quantities of gypsum, used for manure, was brought from the vicinity of Casa Cancha, some twenty miles to the north. Conglomerates prevailed over a great portion of the crest the party traversed. The included pebbles were observed to be of regular shape, smooth and polished as if sea-washed. All the party remarked the smoothness of the pebbles in the torrents of the Cordilleras, which had a strong resemblance to those on the sea-beach. From the information relative to the mines in the Cerro de Pasco, it will have been perceived that blue limestone, slate, and sandstone, exist in that vicinity; and at the silver mines at Alpamarca, a compact bluish rock was observed, probably the limestone; it was not, however, ascertained whether it was argillaceous or a pure limestone. Dr. Pickering remarks, that it contained numerous hard seams of opaque calcareous spar, with somewhat the lustre of "satin spar." Sandstone with small pebbles was not uncommon.

The bare spots of the higher peaks did not present the variety of colour of the Chilian Andes, but had a uniform dark slaty hue. Many incrustations were seen forming on the rocks and plants: this was found to be gypsum.

Previous to our departure, I felt desirous of having an excursion made to the ruins of Pachacamac; and having heard that the landing was easy and good, on the inside of the island, I sent the tender Flying-Fish thither, with Dr. Pickering and Lieutenant Underwood.