

bends towards the Caribbean Sea, producing the trade winds ; again leaves Florida as the Gulf Stream, and washes the coasts of Greenland and Norway, and finally reaches the north polar basin.

Again the great polar force shows itself in the arrangement of the mineral structure below. In all the primary rocks in every quarter of the globe where they have been examined, its action is recognised in giving to the crystalline masses—granites and their laminated elongations—a polar grain and vertical cleavage. “Had it been possible to see our globe stripped of its sedimentary deposits and its oceanic covering, we should see it like a gigantic melon, with a uniform grain extending from pole to pole.” This structure appears to give polarity to earthquakes—thermal waters and earthquakes—which are all traceable in the direction of the polar grain or cleavage from north to south.

In England, for instance, thermal and saline springs are traceable from Bath, through Cheltenham, to Dudley. In Central France, mineral springs occur in lines, more or less, north and south. All the known salt-springs in South America occur in meridional bands. Springs of chloride of sodium in the Eastern Cordilleras stretch from Pinceima to the Llanos de Meta, a distance of 200 miles. The most productive metalliferous deposits are found in meridional bands. The watery volcanoes in South America are generally situated along the lines of the meridional splits and the secondary eruptive pores on the transverse fractures. The sudden ruptures arising locally from increasing tension of the polar force, and the rapid expansion of the generated gases, produce a vibratory jar in the rocky structure below, which being propagated along the planes of the polar cleavage, gives rise to great superficial oscillations, and thus causes earthquakes and subterranean thunder for thousands of miles, from south to north.

In 1797, the district round the volcano of Tunguragua in Quito, during one of the great meridional shocks, experienced an undulating movement, which lasted upwards of four minutes, and this was propagated to the shores of the Caribbean Sea.

All these movements demonstrated, according to Mr. Hopkins, that the land as well as the ocean moves from the south pole and north pole, and that the magnetic power has a tendency to proceed from pole to pole in a *spiral* path from south-east to north-west, a movement which produces an apparent change in the equinoxes, or the outer section of the plane of the ecliptic with the equator, a phenomenon known to astronomers as the precession of the equinoxes.