

cut channels across the ancient ones, and lava-topped intervals remain. These are table mountains. Further south, in Tuolumne county, the ancient and the modern drainage both moved from north to south. The ancient channels, therefore, stretched north and south, and the lava-sheets which filled them stretched from north to south. The modern water-courses have shunned the hard lava, and have dug their channels alongside of the lava, in less consolidated materials—gravels or slates. These positions were formerly the elevated banks of the streams. Thus, the undisturbed, elongated lava-sheets, which rested on the bottoms of the ancient channels, now rest on elongated ridges. The ancient bottoms are beneath these tables. Over the ancient bottoms were distributed the auriferous gravels from the mountains; and here they are still found. They are the “deep placers;” and are explored by drifting in from the sides. The beds of the modern streams, strewn with auriferous sands from the same sources form the so-called “shallow placers.”

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## XVII. IMPRISONED HEAT.

### INTERNAL CONDITION OF THE EARTH.

It is a startling circumstance to see warm water issue from a hole bored in the rocks. The common impression is that deep waters are cooler than the average temperature at the surface. A well of this sort is styled *Artesian*; and you will understand that the water is forced up by pressure of other water standing somewhere, at a higher level, and freely communicating with this. You have learned, for instance (Talk XIII), that strata often dip down from their place of outcrop to a great depth into the earth. Suppose a porous formation, like a sandstone, thus goes down from the surface; the rain which falls on its outcrop must soak into the rock and saturate it. This is then a water-bearing stratum. In descending obliquely it passes under many places; and if a hole should be bored from the surface to this stratum, the water would rise