## PETROLEUMS AND COALS.

unconformable beds of the Quaternary. To go into more details the oil is found in the Santa Clara Valley in ascending order in the following formations:---

In the crystalline schist and gaeiss penetrated by the wells to a depth of 1,100 feet; above this there is a great unconformity but the oil is still found in the following strata in ascending order:—

Lower Eccene-Topatopa quartzites, sandstones and

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equivalent to the Monteray formation)...about 3,500 ft. thick Here there is another distinct unconformity but above it we still find oil in the—

Miocene, Pliocene and Pleistocene-Fernando con-

glomerates, sandstones and arenaceous clays

..... about 9,000 ft. thick

Here again is another distinct unconformity but above it we again find the oil in the Pleistocene gravels, sandstones, clays and conglomerates, of variable thicknesses.

The total thickness of the formations more or less

impregnated with the oil is .....about 25,600 feet.

Although we have here three geological unconformities, meaning long lapses of time and erosion between the deposition of the different formations, yet the oil is in all of them, through a thickness of over 25,000 feet of strata, from and including the crystalline rocks to the most recent gravels, but only along great fault-lines and zones of disturbances. There are three conclusions to be drawn from this which are plain:—1st, the movements of the oil were vertical, not lateral; 2nd, some of these movements were of recent date, namely Post-Quaternary; 3rd, it cannot reasonably be supposed, as some geologists have, that this oil originated in any one of these formations (such as the Monterey which is often cited by Arnold as the source of the oil) as this would entirely fail to explain the oil in the formations below the Monterey and also