that vast quantities of H and carbonaceous compounds exi[illegible] in the earth.

There is a lake of boiling pitch in the Island of Trinidad, having an area of fourteen acres, and it is stated that the supply is being maintained in its centre from some internal source; at Auvergne, central France, there is a bitumen spring; in the **Caucasian mountains and at Baku mud volcanoes associated** with petroleum and natural gas; rivers of oil have boiled from under the Caspian Sea. At other places on the earth's crust, in what are clearly lingering exhibitions of volcanic eruption, we have fumaroles affording all kinds of salts, sulphur and wax; "Moffettes" emitting carbonic acid, as at Naples and Eifel, and the "Solfataras" or "Geysers," **and with these latter there appears to be every reason to infer that all thermal springs are directly or indirectly associated.**

At Calera Rancho, in California, hot gases, hot waters, highly sulphuretted, and petroleum, ooze out of the ground, whilst shales of the Mesozoic and Palæozoic formations are highly calcined, being bleached to porcelain by the action of the gases and liquids in their upward passage through faults and crevices.

In the southern part of the States there are some exceedingly remarkable swellings [b]on the earth's crust, which have proved to be the dome-like covers of immense reservoirs of rock salt, **sulphur, oil, marsh gas and hot saline waters, generally** sulphuretted. Giving an idea of these reservoirs "en passant," after the roof of one was pierced, the drill was lowered 2,100 feet without encountering the bottom, one bed of salt is 700 feet thick; a bed of sulphur in another varies from ten feet to forty feet thick. Sometimes the oil is hot, 110° F., and the gas is at such pressure as to eject strings of tools several tons in weight and lift them high into the air. And when we consider the limited area which the drill occupies, the pressure will appear to be enormous. It has been recorded at [a]1,525 pounds per square inch, but ranges about 600 pounds in new fields, as at Medicine Hat, depth of 600 to 2,500 feet.

It is therefore inferred that the oils with sulphur have been forced by violent action upwards through thousands of feet of rock, and that the heavy saline deposits such as salt and even dolomite, have crystallized out on reduction of pressure and contact with the cooler media. **That they are not now under constant pressure is evidenced everywhere by the lowering of**

(a) Trans-American Institution Mining Engineers.—Capt. Lucas.
(b) Coste on Origin Natural Gas.