mountains, or, lastly, from clefts and fissures caused by disruption."

These arguments, when taken in connection, appear to us to prove that the heat of the springs is derived from the *depths of the channels* in which they flow below the surface. The presence of nitrogen may establish the existence of substances, at considerable depths, capable of decomposing atmospheric air; but when we find that in volcanic Ischia a whole group of springs yields no nitrogen, and that it is not in volcanic regions, but on the borders of granitic elevations, and fractures of ancient strata, that nitrogen is most uniformly the predominant gaseous product, it seems unnecessary to appeal to local volcanic excitement for an effect which apreads both in time and area far beyond the traces of purely volcanic phenomena.

That hot springs are numerous in volcanic regions is a certain and even necessary truth; but they appear quite as abundant on the ancient lines of uplifted rocks, like the Pyrenees, where professor Forbes has traced so many to their origin at the junction of stratified and unstratified rocks, that it seems in that region almost an invariable concomitant circumstance.* "The general connection of the hot springs with the granite is so remarkable in that country, as to strike the observer at once; but there are several other peculiarities worthy of note. The abundance of hot springs increases in a very remarkable manner as we advance eastward in the range; nor can any one have a just idea of the prodigal abundance of these thermal waters, who has not visited the departments of the Arriège and the Pyrénées Orientales. Their temperatures are also the highest. In this part of the chain, granitic formations preponderate; yet in almost every case which I have examined, if springs rise in granite, *it is just at the boundary of that formation with a stratified rock.*"

* Phil. Trans. 1836, part ii.