moist atmosphere charged with carbonic acid, and the feldspathic silicates are converted into clays with separation of an alkaline silicate, which, decomposed by the carbonic acid, finds its way to the sea in the form of alkaline bicarbonate, where, having first precipitated any dissolved sesquioxyds, it changes the dissolved lime-salts into bicarbonate, which precipitated chemically or separated by organic agencies, gives rise to limestones, the chlorid of calcium being at the same time replaced by common salt. The separation from the water of the ocean, of gypsum and sea-salt, and of the salts of potash, by the agency of marine plants, and by the formation of glauconite, are considerations foreign to our present study.

In this way we obtain a notion of the processes by which, from a primitive fused mass, may be generated the silicious, calcareous and argillaceous rocks which make up the greater part of the earth's crust, and we also understand the source of the salts of the ocean. But the question here arises whether this primitive crystalline rock, which probably approached to dolerite in its composition, is now anywhere visible upon the earth's surface. It is certain that the oldest known rocks are stratified deposits of limestone, clay and sands, generally in a highly altered condition, but these, as well as more recent strata, are penetrated by various injected rocks, such as granites, trachytes, syenites, porphyries, dolerites, phonolites, etc. These offer, in their mode of occurrence, not less than their composition, so many analogies with the lavas of modern volcanos, that they are also universally supposed to be of igneous origin, and to owe their peculiarities to slow cooling under pressure. This conclusion being admitted, we proceed to inquire into the sources of these liquid masses, which, from the earliest known geological period up to the present day, have been from time to time ejected from below. They are generally regarded as evidences both of the igneous fusion of the interior of our planet, and of a direct communication between the surface and the fluid nucleus, which is supposed to be the source of the various ejected rocks.

These intrusive masses, however, offer very great diversities in their composition, from the highly silicious and felspathic granites, eurites, and trachytes, in which lime, magnesia and iron are present in very small quantities, and in which potash is the predominant alkali, to those denser basic rocks, dolorite, dierite, hyperite, melaphyre, euphotide, trap and basalt; in these, lime, magnesia and iron-oxyd are abundant, and soda prevails over the potash. To account for these differences in the composition of the injected rocks, Phillips, and after him Durocher, suppose the interior fluid mass to have separated into a