constant association of these phenomena, appear to demonstrate the existence of a relation of cause and effect. Formerly the role of organic matter in the formation of glauconite was specified by saying that it determined a reduction of the iron to the state of protoxide, but this interpretation is not admissible at the present time, for we have seen by the analyses that iron exists in glauconite in the state of peroxide. It may be urged that an infiltration pure and simple of the solution which forms glauconite into the cavities of the organisms takes place, the same as in a geode. This solution, being attracted by the organic matter, may act upon the solid matters derived from the mud already enclosed in the cavities of the organisms. This, however, does not appear to be the most probable interpretation. In describing the microstructure of the glauconitic grains, it was pointed out that inclusions of mud, of quartziferous particles, grains of magnetite and other minerals, were sometimes observed, and that these probably pre-existed in the shells before the development of the glauconite. It would appear that these enclosed materials must have undergone with time a molecular modification, whose final term is seen in the typical dark green granules, presenting feeble double refraction and aggregate polarisation, and possessed of a greater hardness than the lighter coloured glauconitic casts of organisms, in which a more earthy nature may be observed. It is certain that very fine mud is washed into the *Globigerina* shells, and may penetrate through the foramina. If we admit that the organic matter enclosed in the shell, and in the mud itself, transforms the iron in the mud into sulphide, which may be oxidised into hydrate, sulphur being at the same time liberated, this sulphur would become oxidised into sulphuric acid, which would decompose the fine clay, setting free colloid silica, alumina being removed in solution; thus we have colloid silica and hydrated oxide of iron in a condition most suitable for their combination. To explain the presence of potash in this mineral, we must remember that, as we have shown when speaking of the formation of palagonite under the action of sea-water, there is always a tendency for potash to accumulate in the hydrated silicate formed in this way, and, as we have stated before, this potash must have been derived from the sea-water.

If we recall the observations with reference to the geographical distribution and mineralogical and lithological associations, it seems possible to suggest, with a considerable degree of certainty, the relative abundance of potash in the deposits where glauconite is forming. It was pointed out that glauconite was always associated with terrigenous minerals, and in particular with orthoclase more or less kaolinised and white mica, and with the debris of granite, gneiss, mica-schists, and other ancient rocks. We cannot fail to be struck with these relations, for it is just those minerals and rocks that must give birth by their decomposition to potassium, derived from the orthoclase and the white mica of the gneisses and the granites.[1] The minute particles of these rocks

[1] It has been shown in fact, by Guignet and Telles, that the water of the Bay of Rio Janeiro contains a large amount of potassium salts evidently due to the presence of ancient rocks in this bay (see *Comptes Rendus*, tom. lxxxiii. p. 919, 1876).