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the deep sea nodules are but the remains of these. Structurally, evidence of one or several neuclei about which the oxide formed in rude concentric layers still remains as areas of red or white clayey material-the residum resulting from decomposition. In many cases the nodules were undoubtedly organic and careful search will probably reveal fossils; but the zone of manganese ore owing to its being a water way is a zone of decomposition and hydration. Where the strata underlying manganese-carrying rocks are sandstone or other pervous rocks concentration does not take place, the grade is poor, and the ore is apt to occur with large quantites of silica or silicates, as on the Pacific coast, and it is disseminated irregularly so that it is valueless as a marketable The occurrence of melaphyre at the base of the limestone ore. on Quaco Head is paralleled by most of the European deposits; but is not common in this country.

Genetically considered the history of our manganese deposits along the Atlantic coasts seems to me essentially as follows, ignoring the processes which build manganese, iron, and phosphorus into concretionary masses in the great depths of the ocean : Primarily, nearly all manganese occurring as beds must have been derived from the sea water, which is well known to carry an appreciable percentage of it as well as phosphorus and iron. Varions dredging expeditions have noted the intimate association of mangauese and phosphatic nodules with red, calcareous diatomaceous ooze of the deep sea principally along the 2600 fathoms sounding. -The similarity in appearance and chemical composition of these nodules with those of Quaco have already been pointed ont. Going back in the history of this deposit we find it occupying a position comparable to the deeper portions of the ocean floor at present. Alternating strata of calcareous red ooze and limestone having manganese nodules lay on a massive base of malaphyre. These strata have been indurated and elevated, and the manganese which occurred in these as disseminated grains and nodules has by a process of concentration wholly or partially re-concreted into "kidney ore" and stalactitic masses, the impervious character of the stratum below permitting and causing this concentration to take place at or near the top of the impervious layer, as this would be a zone maximum interstitial water. Theoretically stalactites would be entirely reconcrete? matter, the "kidney ore" wholly or partially, while the porons varieties would probably con-PROCEEDINGS B. S. N. H. VOL. XXV. 17 May 1801.