Blue muds characteristically occur. Oxidation of the organic matter is here effected at the expense of ferric iron, probably by bacterial agency. A special case of this, viz. the bacterial production of ferrous sulphide and free sulphur, has already been referred to. It may be that sulphur plays an intermediate part in the formation of Blue muds, but the end-product is simply a clay, in which some or most of the iron has been reduced to the ferrous state, containing 1 or 2 per cent of amorphous black organic substance. To these two factors the distinctive dark colour is due. The organic substance is associated with but little nitrogen and hydrogen, and it no doubt represents the final refuse of bacterial and higher forms of life. Blue muds are produced out of the deposit from the top downwards, as is evidenced by the reddish unreduced layer overlying the deeper Blue ones. Since Blue mud is of terrigenous origin, the undegraded silicate which it contains consists of continental minerals.

From the general conditions obtaining in reducing areas it follows that carbonic acid must be unusually plentiful in the mud-waters. A consequence of this is that calcium carbonate, if deposited, is readily redissolved. Hence the Blue muds are on the whole poor in lime. It further follows that lime is tending to accumulate in the deposits of the moderate depths of the ocean, between the reducing areas and the abysses where it is dissolved before reaching the bottom.

Doubtless the decay of minerals on the floor of the sea follows much the same course as subaerial weathering. Intermediate products, however, are comparatively rare, since the general conditions are not (as on land) subject to variation. The only substances of this category which form in any profusion are zeolites, especially the one known as phillipsite. Here and there intermediate products are arrested by being surrounded with concretions. A notable instance is the mineral palagonite, which is frequently found at the centre of ferro-manganic nodules. Basic volcanic glass (an amorphous fused silicate of calcium, magnesium, and ferrous iron) has the property of combining with water continuously from the periphery inwards without crumbling, giving what is virtually a hydrated aluminium-iron silicate in a medium of opal. A coating of concretionary matter prevents the gelatinous silica from breaking away and dissolving, but offers no resistance to the diffusion of calcium and magnesium, which are leached out. Meanwhile the colloidal silica exerts its absorbing power on

Palagonite.