Free sulphur has been found in a maximum of 0.003 per cent in oceanic deposits,[1] although inland and estuarine deposits may contain rather more. We may therefore take it that the aggregate influx of oxidized sulphur into the ocean greatly exceeds the fixation of reduced sulphur at the bottom.

The elements silicon (as hydrated silica) and phosphorus (as calcium phosphate) are transported by biological agencies from the sea to the bottom, the former in large, the latter in small, quantities. The compounds referred to are capable of existing in solution in sea-water only to an infinitesimal extent, so that all the silicic and phosphoric acids carried into the ocean must eventually find their way to the bottom.

Silica.

The silica of organic origin in deep-sea deposits, which of course represents but a tiny fraction of the total silica present, is peculiar in having been derived not only from dissolved, but also from suspended, silicates.[2] It takes the form of tests and skeletons characterising the important Diatom ooze and Radiolarian ooze areas, and of sponge spicules, which are ubiquitous but nowhere concentrated enough to give rise to a definite deposit. Chemically, this silica is in the hydrated colloidal condition not unlike opal. By what process the siliceous organisms convert their intake of dissolved silica and floating clay into structural silica is not clearly known; as regards the former, it is evident that the organisms possess some means of coagulating to a hydrogel the silica which they receive either as SiO_3'' ions or as a hydrosol of silicic acid; whilst their argillaceous food is probably decomposed by some acid juice with elimination of alumina in solution and eventual deposition of coagulated silica. During life, siliceous tests are protected from dissolution by an admixture of albuminoid matter, which rots away after death. The hydrogel of silica then undergoes peptisation (that is, so much of it as does not fall to the bottom), probably by virtue of the free alkali in sea-water, and returns to the dissolved state. The conditions of dissolution of silica and, for instance, calcium carbonate are very different. Silica, as being a colloid, has not a definite solubility; its existence as a hydrosol is limited only by the coagulating action of the electrolyte solutes of sea-water or by its precipitation in combination with a base. As to the former effect, we have no data except that sodium chloride is comparatively feeble as a coagulant. It is remarkable that no silica seems ever to reach the bottom as a chemical precipitate

[1] Buchanan, *Proc. Roy. Soc. Edin.*, vol. xviii. p. 17, 1891.
[2] Murray and Irvine, *Proc. Roy. Soc. Edin.*, vol. xviii. p. 229, 1891.