

and proclaim the origin of petroleum as a profound mystery not yet solved by science.

As I have long contended, I, for one, cannot understand how it is that the solfataric volcanic origin of the petroleum should be considered as any more doubtful and less proven than is the organic origin of the coals. It seems to me that the geological facts proving the one are just as clearly established scientifically to-day as are the facts proving the other. They are simple facts, the A. B. C., so to say, of geology, and yet strange to say they are every day ignored and set aside.

There can be only two kinds of organic matter in nature to which the derivation of petroleum might be attributed, namely:—*First*—The soft tissues of animals. *Second*—Vegetation.

1st.—But the soft tissues of animals always decompose, decay completely and disappear entirely before their entombment in the sedimentary strata can possibly take place. It leaves us, therefore, only the vegetation to deal with in the consideration of this problem. That the soft tissues of dead animals entirely disappear before the entombment of their hard part, even in the comparatively rare cases where the entombment of the latter takes place, is one of the best known and best proven facts in geology:—water, carbon dioxide and ammoniacal salts, are the chief products of the decomposition (⁴⁷), no petroleum is formed. If it had been otherwise we would not find, as we do, even in recent Quaternary deposits, many beds composed entirely of ostras, corals and shells of all kinds such for instance as the "coquina" beds of Florida, absolutely devoid of some carbon-compound to represent the supposed entombed soft tissues of the animals; while, in the fossil-shells and other hard parts of the animal life which we have collected in great abundance in our paleontological museums, from strata of every geological age, we would surely often see at least a modicum of some carbon-compound; but we may examine millions of these fossils and see nothing of the kind, even when these fossils were collected in impervious shales from which the decomposed products of the soft tissues of the animals, if they had been entombed and had decomposed there, could not possibly have escaped. In very rare cases we do find portions of

47. Bulletin U. S. Geol. Surv., No. 330, p. 116.