THE TIME FACTOR IN THE ACCUMULATION OF OIL AND GAS

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The study of the origin and accumulation of petroleum has very naturally been analytic so that we have had a variety of studies of its several features. As the process is a continuous one, passing through a long period of time, it has seemed to me desirable to try to string together the several elements which have come to be seriously considered in their time relationship, in order to see if something of moment might not arise from that arrangement.

Starting with organic remains as the original source the first time feature is the necessity of slow decomposition. The most essential requisite is the presence of water containing either salt or the combination of qualities found in the water of stagnant swamps. The second most important feature is the existence of cellulose and this mainly as the fibro-vascular bundles of the higher plants and spore exines, resins, and waxes. As a third factor the presence of the floating bubble of oil found in diatoms has been suggested. This bubble would presumably outlast the protoplasm, but we do not yet have definite evidence that such bubbles would be brought to the bottom by the weight of the exo-skeleton which also outlasts the protoplasm. Unless the exo-skeleton not only cages the persisting drop, but weighs it down fully to the bottom, the diatoms would seem to be impotent, but if that is the case their role must be greatly superior to that of the foraminifera, which would seem to offer relatively slight opportunity for deposition of organic matter because of their very soft unstable protoplasm.

Unless we can look to the diatom it seems difficult to believe that there are important organic constituents in deep sea deposits when they are eventually covered.

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