

by the magnesian salts of sea-water as already explained (pp. 546, 695). Traced to a distance, the limestones are often found to grow thinner, and to be separated by increasing thicknesses of shale, or to become more and more argillaceous and to pass eventually into shale. The shales, too, are often largely calcareous, and charged with fossils; but in some places assume dark colors, become more thoroughly argillaceous, and contain, besides carbonaceous matter, an impregnation of pyrites or marcasite. Where the marine Carboniferous type dies out, the shales may pass even into coal, associated with sandstones, clays, and ironstones. In Britain, abundant contemporaneous volcanic rocks are preserved in the Carboniferous Limestone series.

The second facies of sedimentation points to deposit in shallow lagoons, which at first were replenished from the sea, but afterward appear to have been brackish and then fresh, or in lakes into which coarse and fine detritus as well as vegetation and animal remains were washed from neighboring land. The most abundant strata of this type are sandstones, which, presenting every gradation of fineness of grain up to pebbly grits, and even (near former shore-lines) conglomerates, are commonly yellow, gray, or white in color, well-bedded, sometimes micaceous and fissile, sometimes compact; often full of streaks or layers of coaly matter. Besides the existence of pebbly grits and conglomerates pointing to comparatively strong currents of transport, there occur, in different parts of the Carboniferous system, scattered pieces and even blocks of granite, gneiss, quartzite, or other durable material which lie imbedded, sometimes singly, sometimes in groups, in limestone, sandstone, and in coal. Various explanations have been proposed to account for these erratics, some writers having even suggested the action