

15. Well logs and drilling cores from oil fields, which provide us with the structure and composition of entire, local stratigraphic columns. In the past we have too often neglected to study the deeper parts of the local stratigraphic columns in areas where we have focused attention upon a single geologic formation. There are now available very complete records of the local columns in many geographic areas, in the literature of petroleum geology. For example, Hughes (1954) gives the 16,705 ft. column of the Richardson and Bass #1 Harrison-Federal well, in the Delaware Basin of Southeast New Mexico, as a 167 inch printed column. By devoting one inch to each 100 feet of well core he was able to show the lithology of the entire well in considerable detail. Also included are the generic names of some of the fossils, to a depth of 16,000 ft. Such records as this help make possible a study of both the chemical and physical nature of the contrasting layers in the column, as well as of some of the types of animals & plants present at the times of deposition.¹⁵

16. The unequal distribution of marine fossils in limestone and other formations. An example of this is the abundance of certain kinds of very dense, thick shelled mollusks of Class Pelecypoda in the upper strata, but an absence of the same types in lower layers. Conversely, some of the less dense animals, e.g., numerous species of Phylum Arthropoda are abundant in lower strata but are not found in upper layers. Recent electron microscope studies of the chitin of trilobite skeletons give evidence for a low density for these animals. Similarly, many species of the cephalopods, of Phylum Mollusca, though very buoyant, due to the air chambers of their shells, are found only in the deeper strata of the earth, indicating that they were buried before the formation of the Mesozoic and Cenozoic strata, and that they became extinct before the Mesozoic and Cenozoic strata were laid down.

Even the very fact that many types of fossils are abundant in only a small percent of the stratigraphic column in a given locality, but not found at all in other parts of that column, should be a cause for much serious study.¹⁶