thick; and many other sections of the continental shelf have from 10,000 to 30,000 feet.[16] These are the sediment masses which contain our off-shore oil reserves.

Just what these thicknesses near the continents represent in terms of time is usually difficult to say with confidence, since we do not know how much variation there has been in the rate at which moving water has carried sediments off the continents into the sea. The present rate of deposition on continental shelves is usually 15 to 40 centimeters (6 to 16 inches) per 1,000 years, though it is much greater near the mouths of rivers. The rates in the deep parts of the Gulf of Mexico and of the Gulf of California are 10 centimeters and 100 centimeters per 1,000 years respectively.[17] During the most recent period of glaciation, deposition rates near the continents were of course much higher than these. How many periods of rapid erosion and deposition there have been, due to ice-age influence and major floods, we do not know. Dating methods which are of value in a study of the great beds of sediments around the continents are available, but because of the large variation in sedimentation rates in these areas we are devoting our attention primarily to the sediments of the open oceans.

In the vast stretches of deep-sea floor where sediment deposition rates are <u>not</u> directly affected in a major way by rates of erosion off the land masses, we can find a dependable source of information concerning some of the more recent periods of geologic history. It is true that certain major disturbances on land--especially on volcanic islands--have resulted in the rapid formation of sediment layers at considerable distances out on the ocean floor. However, layers formed in this way are so different in substance from the usual pelagic ooze which accumulates on the floor that they are immediately recognizable in the drilling cores which have penetrated the strata. When such layers are found by a research team, the measurements are duly recorded, but are kept separate from the measurements of the normal pelagic sediments.

Most parts of the deep floor of the Atlantic Ocean have a sediment covering which is from 1,200 to 3,000 feet in thickness.[18] This is the amount of deposit which lies on top of the igneous-rock "basement" of the ocean floor. (In most cases this igneous-rock foundation is basalt.) Some of the major kinds of sediments in the covering of the deep Atlantic floor are calcareous (chalk) ooze, radiolarian and diatom (siliceous) ooze, carbonate marl, pelagic clays (various kinds of clay which come from the continents), lithified chalk, limestone, dolomite, chert, and volcanic ash (volcanic mud). More than 10 cruises of the Deep Sea Drilling Project in the Atlantic have taken extensive sediment cores from numerous sites in the main floor of this ocean, as well as making many drillings on the Mid-Atlantic Ridge. Detailed descriptions of the sedimentary columns studied through these drillings are published in the series, <u>Initial Reports of the Deep Sea Drilling Project</u>.[19]

The sediments of the Pacific floor are of types similar to those found in the Atlantic, but the thicknesses and arrangement of the